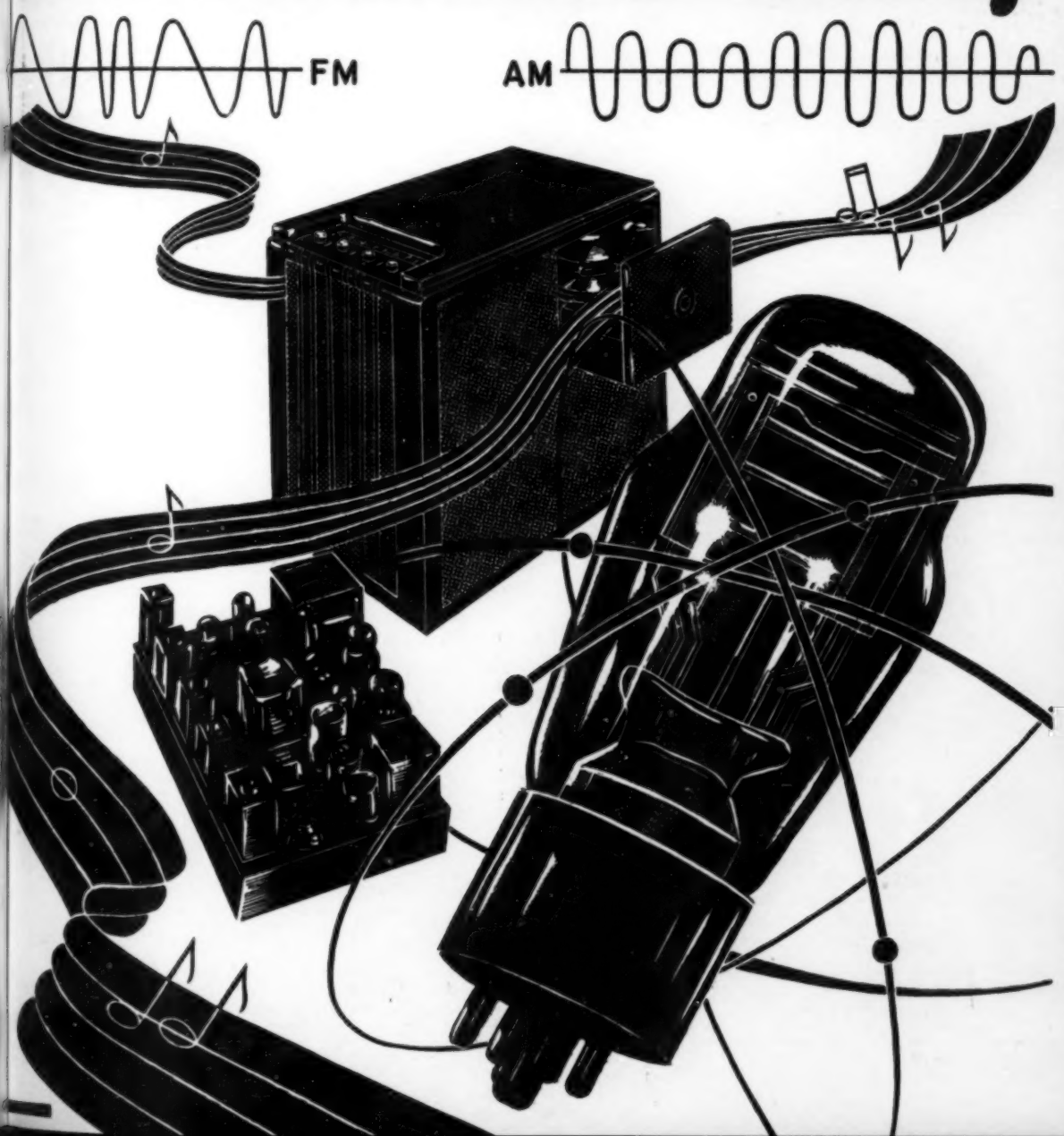
Consumer Reports

"FACTS YOU NEED BEFORE YOU BUY"

CU'S FIRST REPORT ON FM RADIOS



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CONSUMER REPORTS

Volume 11, No. 9 — September, 1946

In This Issue

CONSUMERS UNION *is a non-profit organization chartered under the Membership Corporation Laws of New York State. Ratings of products represent the best judgment of staff technicians or of consultants in university, governmental or private laboratories. Samples for test are in practically all cases bought on the open market by CU's shoppers. Ratings are based on laboratory tests, carefully controlled use tests, the opinion of qualified authorities, the experience of a large number of persons, or on a combination of these factors. Even with rigorous tests, interpretation of findings is a matter on which expert opinion often differs. It is Consumers Union's pledge that opinions entering into its evaluations shall be as free from bias as it is possible to make them.*

The Congressional Record

Many members of Congress appear to think that the average consumer is a pretty stupid fellow. They think they can slap him around, take money out of his pocket, generally treat him as a second class citizen; and that he will take this kind of treatment and like it—and vote them right back into office. November 5th will show whether they are right—as they have been right so often in the past.

The trouble is not, we feel sure, that our representatives don't love us. It's just that they love somebody else more, the somebody else being the interests (cotton in the South, for example) that contribute campaign funds, and the political bosses controlling patronage and comfortable blocks of votes. A great many members of Congress know they can't fool these powers, but they do think they can fool the consumer. And so long as they think this way, they'll continue to decide domestic economic issues in favor of the speculator and the profiteer and against the ordinary consumer.

Well, what about it? Will we help to reelect Congressman and Senators whose shameful behavior in the price control fights has cut the living standards of millions of American families and threatened the stability of our economy? Will we help reelect Congressmen and Senators who, in the face of a devastating housing crisis, voted to make real estate a speculators' paradise by keeping price control from applying to existing houses?

We believe that the failure of the people to throw out of office Senators and Congressmen who worked against them and for special interests has resulted, in the past, not from the stupidity or indifference of the voters or from any desire to turn the other cheek, but mainly from the difficulty of checking on the past records of members of Congress. This year, to help voters cast their ballots intelligently and for their own best interest, a number of organizations are publishing the voting records of the members of the last Congress.

Because Consumers Union feels that the Congressional votes on price control and housing legislation should carry great weight with consumers when they decide how to vote in November, we are publishing in CU's weekly *Bread & Butter* a tabulation of the votes of all Representatives and Senators on crucial price control and housing amendments. If you don't get *Bread & Butter*, you can get a copy of the tabulation by sending a stamped self-addressed envelope to CU with your request for it.

We urge you to study the record of your representatives in Congress if they are running for reelection, to discuss the record with your friends and in organizations to which you belong, and to consider it carefully when you decide whether these representatives have earned your vote. To the extent that consumers do this, they will get better protection of their interests in the next Congress.

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FIRST REPORT ON FM RADIOS

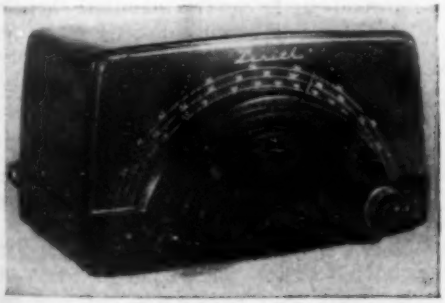
Of eight FM radios tested, only two were rated "Acceptable;" even the $1000 Scott combination failed the tests because of mechanical defects

EIGHT models of radios equipped for FM reception have now been tested by CU. Of these, only two could be rated "Acceptable." The remainder all had such serious defects as to place them in the "Not Acceptable" class. And into this hopper CU technicians were forced—regretfully—to put the $1000 *Scott* combination.

A FINE INSTRUMENT—BUT

It was only after considerable deliberation that CU placed its "Not Acceptable" stamp on an instrument with as many outstandingly good qualities as the *Scott*. But there is no getting around the fact that, despite its many and important virtues, the *Scott* simply did not meet one important criterion for consumer acceptance: there was a serious mechanical defect in the switch for changing back and forth from AM to FM, such that the radio became inoperative in very short order. After the instrument was sent to the dealer for repair, it was returned to CU in playing condition, but the solenoid-driven switch again became defective in the course of testing, after the radio had been used for only a few days. Since this switch is an integral part of the mechanism of the *Scott*, CU cannot give it an "Acceptable" rating until the design has been improved.

The *Scott* is, however, an excellent receiver—when it is playing. The model tested had tone and volume far superior to any other receiver that has yet come through CU's laboratory, and it was highly satisfactory in other respects. But it is CU's feeling that, when a consumer spends over $1000 for a radio-phonograph, he wants it to play all the time, day after day, without constant shipment back and forth for repair.



ZENITH 8H023: *rated "Not Acceptable" because of very low sensitivity on AM and very poor static suppression on FM.*

MODELS TESTED

Of the eight brands of FM radios tested, two were table models having AM and FM; three were consoles with AM and FM; three were FM-AM-phonograph consoles.

The two found "Acceptable" were the *Stromberg-Carlson* $209.75 console (two FM bands, AM band, short wave band) and the $329.40 *Zenith* radio-phonograph (two FM bands AM band, short wave band, record changer).

The other six were all "Not Acceptable," for various reasons:

- The *Zenith* (table model, $58.35) had very low sensitivity to AM, and had very poor static suppression on FM.
- The *Pilot* (table model, $133.25) had very low sensitivity to FM, and gave very poor speech reproduction —barrel-like and lacking in sibilants —on AM.
- The *Zenith* (console, $143.40) produced loud microphonic howls when the volume was raised to a moderately loud level.
- The *Philco* (console, $140.35) had very low sensitivity to AM.
- The *Stromberg-Carlson* (console radio-phonograph, $298.90) produced loud microphonic howls when the volume was raised to a moderately loud level.

And the *Scott* (console radio-phonograph, $1007.25) had a poorly-designed switch (as discussed above) which broke down in operation.

WHAT IS EXPECTED

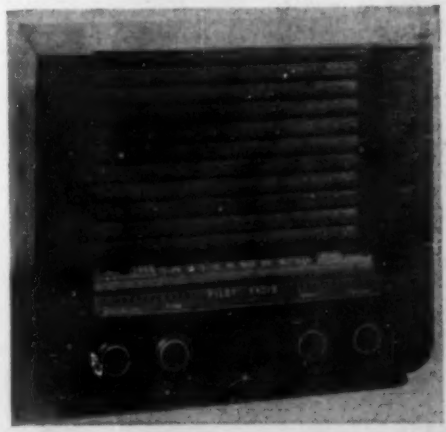
As pointed out in the article on FM (see page 230), while frequency modulation broadcasting and reception has certain inherent advantages, a small FM radio cannot be expected to do as well on tone and fidelity as a well-built console. But static is an entirely different story. A properly designed FM receiver—large or small—should be able to suppress both man-made (automobile ignition, telephone dial, electric shaver) and natural (lightning) static. An FM receiver that cannot do this loses perhaps the most important single advantage of frequency modulation. Tests were made on static suppression of the various radios, and the results are reported in the ratings.

While it is expected that FM will displace AM broadcasting within a few years in most sections of the country, at the present time AM is still *the* standard and CU considers that there is no excuse for a radio's having a poor or makeshift AM section, as did several of the radios tested.

CU hoped to find a moderately priced receiver, good on both AM and FM. Unfortunately, CU has not yet found such a set. And, since (according to FCC estimate) only eight percent of the radios being produced this year are equipped with FM in the face of a high demand, it seems likely that the consumer will have to pay a premium for FM for some time to come.

TUNING THE SET

One of the first things a new FM user will notice is that FM is more difficult to tune than AM. This is because an FM station normally comes in at three closely adjacent spots on the dial, and it is not always easy to distinguish the principal (middle) spot. It is at this spot that the station is received with minimum static and distortion.



PILOT T-531: *rated "Not Acceptable" because all three samples tested had extremely low sensitivity to FM. Speech reproduction on AM was very poor.*

In a properly designed and adjusted FM set, the point of minimum static is the same as the point of minimum distortion. But this is not true of all receivers. You can find the point of minimum static on your FM set easily enough by creating a strong static (with the vacuum cleaner or an electric shaver) while tuning the radio.

A "magic eye" is a helpful adjunct to FM tuning, but of the radios tested by CU, only the *Scott* had this feature.

A difficulty encountered in FM tuning is "drift"—the tendency of the radio to get out of tune after a station is first tuned it. Because of drift, for best reception it may be necessary to retune an FM set several times during the first hour or so after it is turned on.

RECEPTION

All of the radios tested except the *Scott* and the *Pilot* had built-in FM antennas of one sort or another. While built-in antennas should provide satisfactory service in many locations, an outside aerial may be needed for good reception in such "difficult" locations as steel-framed buildings, locations far from the transmitter or badly located relative to it, and places where there is a great deal of man-made static.

RADIO TESTS

The AM sections of the radios were tested and rated on the same basis as console and table models previously rated (see the *Reports* February, 1946). The FM sections were tested for tone, maximum and minimum tuning frequency in the FM band, usable sensitivity, rejection of interfering stations, static suppression, loudness, automatic volume control, and station drift after tuning.

TOP: *Stromberg-Carlson 1121-PLM. $298.90. Rated "Not Acceptable" because the samples tested had a loud, low-frequency microphonic feedback howl.*

CENTER: *Scott 800-B. $1007.25. Rated "Not Acceptable" because of serious defects in the switch for changing back and forth from AM to FM.*

BOTTOM: *Zenith 12H090. $329.40. The FM section had high usable sensitivity in comparison with other sets tested. Rated "Acceptable."*

Preliminary tests were made on the record changers of combination instruments, and comments made in the ratings are based on these tests. Further tests are now under way on these and many other record changers, and a full report on them will be given as soon as tests are completed.

In the ratings, unless otherwise indicated the radios listed were for a-c operation only; they had no tuning eye or push-button tuning, had a single knob for continuously variable combination treble-and-bass tone control, and had no short wave bands.

Prices given were OPA ceiling prices in August 1946 in Zone I (Eastern).

Consoles with Record-Changers

ACCEPTABLE

Zenith 12H090 (Zenith Radio Corp., Chicago). $329.40. Twelve tubes, including one rectifier and one tuning eye. Walnut-finish cabinet with pull-out control panel and pull-out record changer. Six push-buttons for tone control. Slight shock hazard, but no short circuit hazard. One sample tested.

FM Section. Fairly good tone; good volume; high usable sensitivity in comparison with other sets tested. Satisfactory interference rejection; satisfactory static suppression. Had both FM bands (see page 230).

AM Section: Good tone; very good volume; poor sensitivity; excellent automatic volume control; fairly good interference rejection. Tuning eye. Five electric push-buttons. Single short-wave band, covering 25- and 31-meter broadcasts.

Phonograph: Zenith S-11680 record changer, with **Cobra** pickup. Played 14 ten-inch records, or 10-twelve-inch records, or 12 records intermixed. Had switch for manual operation. Weight at needle, 0.7 oz. (very light). Turntable speed about one-quarter tone high; not adjustable. Fair fidelity with very limited treble response; low background noise level; inaudible needle noise (sound coming directly from the needle, without passing through amplifier).

NOT ACCEPTABLE

Scott 800-B (Scott Radio Laboratories Inc., Chicago). $1007.25. Twenty-four tubes including two rectifiers, one voltage regulator and two tuning eyes. Mahogany finish cabinet with slide-out control panel and slide-out record changer. "Not Acceptable" because of poor AM-FM changeover switch which broke down in use (see text). Separate treble and bass tone controls. Slight shock hazard but no short cir-

cuit hazard. One sample tested.

FM Section: Very good tone; excellent volume; fairly high usable sensitivity in comparison with other sets tested; satisfactory interference rejection; good static suppression. Tuning eye. Three motor-driven push-buttons. Had only one (100 mc) FM band.

AM Section: Good tone; excellent volume; fair sensitivity; very good automatic volume control; fairly good interference rejection. Audible hum. Tuning eye. Nine motor-driven push-buttons. Selectivity and sensitivity controls. Single, crowded short-wave band, covering 16- to 49-meter broadcasts.

Phonograph: Garrard RC 60 record changer. Played 8 ten-inch records or 8 twelve-inch records, or 8 records intermixed. Automatic shut-off after last record. No provision for manual operation. Weight at needle, 1.5 oz. (light) but extremely bad needle wear resulting from. Adjustable speed. Fairly good fidelity; inaudible needle noise. Motor very weak; would not restart if turned off during changing cycle. Audible wow in sample tested. Clearance of drawer inadequate for changer; drawer jammed if closed with changer arm in up position. Tone arm rest poorly designed.

Stromberg-Carlson 1121-PLM (Stromberg-Carlson Co., Rochester, N. Y.). $298.90. Eleven tubes including rectifier. Walnut-finish cabinet with control panel and phonograph under split lift-up lid. Eight mechanical push-buttons for AM or FM. 31-meter short-wave spread band. Had both FM bands. Sample tested had a loud, low-frequency microphonic feedback howl. Except for this annoying howl, AM and FM performances were about equal to those of **Stromberg-Carlson** 1121-LW, below. One sample tested.

Consoles with FM

ACCEPTABLE

Stromberg-Carlson 1121-LW (Stromberg-Carlson Co.). $209.75. Eleven tubes including one rectifier. Walnut finish cabinet. Eight mechanical push-buttons for either AM or FM. No shock hazard; no short circuit hazard. Difficult to tune accurately because of poorly-designed drive between tuning knob and tuning mechanism resulting in springy tuning. Audible hum; objectionable on one sample. Two samples tested.

FM Section: Good tone; good volume; satisfactory usable sensitivity; satisfactory interference rejection and static suppression. Tuning range two channels (0.4 mc) short of the high end of the FM band on one sample. Had both FM bands.

AM Section: Fairly good tone; good volume; poor sensitivity; good automatic volume control; fair interference rejection. Short-wave band covering 31 meter broadcasts.

NOT ACCEPTABLE

Philco 46-480 (Philco Radio & Television Corp., Philadelphia). $140.35. Seven tubes including one rectifier. Walnut finish cabinet. Five electrical push-buttons for AM only. Had one (100 mc) FM band. Single short-wave band covering broadcasts from 19 to 31 meters. Relatively poor tone and low sensitivity on FM. "Not Acceptable" because sensitivity of AM sections was extremely poor on all three samples tested.

Zenith 8H061 (Zenith Radio Corp.). $143.40. Eight tubes including one rectifier. Walnut finish cabinet. Six push-buttons for tone control. Had both FM bands. "Not Acceptable" because all three samples tested had loud microphonic feedback howl. Lacked high fidelity on FM because of inadequate treble response. Easy to tune because of high FM sensitivity.

Table Models with FM

NOT ACCEPTABLE

Pilot T-531 (Pilot Radio Corp., NYC). $133.25. Eight tubes including one rectifier. Large table radio (16" h. x 18" w. x 11" dp.) in walnut finish cabinet. Ac-dc operation. Had one (100 mc) FM band. Single short wave bands covering broadcasts from 16 to 49 meters, plus two short-wave spread-band covering the 25- and 31-meter broadcasts. "Not Acceptable" because all three samples tested had extremely low sensitivity on FM. Speech reproduction on AM very poor.

Zenith 8H023 (Zenith Radio Corp.). $58.35. Eight tubes including one rectifier. Small table radio (7" h. x 14" w. x 8" dp.) in brown plastic cabinet. Ac-dc operation. Three-position tone control. Had both FM bands. Tone control became inoperative as a result of poor mechanical design. "Not Acceptable" because of very low sensitivity on AM and very poor static suppression on FM. Only one sample tested.

TOP: *Stromberg Carlson. 1121-W. $209.75. Rated "Acceptable" despite poorly designed mechanism which makes accurate tuning difficult.*

CENTER: *Zenith 8H061. $143.40. Rated "Not Acceptable" because all three samples tested had loud microphonic feedback howl.*

BOTTOM: *Philco 46-480. $140.35. Rated "Not Acceptable" because sensitivity of AM section was extremely poor on all three samples tested.*

FREQUENCY MODULATION

FM offers certain definite improvements over AM, but whether or not a consumer can take advantage of these improvements depends on where he lives

The letters "FM" had begun to be heard several years before the war, in reference to a new kind of radio broadcasting and receiving apparatus. They are destined to be heard more and more as this kind of radio reception becomes widely available.

Just what is FM, and what does it mean to the radio listener? CU will attempt, in this article, to give a few pertinent facts about it. This is not a discussion from an engineering viewpoint, but rather a general analysis of the good and bad points of *frequency modulation* (FM) broadcasting, and what it has to offer the listener in comparison with the standard *amplitude modulation* (AM) broadcasting of today.

DIFFERENCES BETWEEN AM AND FM

In radio, as in any system of wireless communication, broadcasting is accomplished by sending out electromagnetic waves from a transmitting apparatus. The *frequency* (the number of times per second these waves "vibrate" back and forth) of the waves ranges from 100,000 *cycles* (vibrations per second)—otherwise stated as 100 kilocycles or 100 kc—to 30,000,000,000 cycles (30,000,000 kc, or 30,000 megacycles or 30,000 mc), depending on the type of communications service.

In ordinary AM broadcasting, the frequency range now used is from 535 kc to 1605 kc. This range is known as the standard broadcast *band*.

At the present time, there are two FM bands in use. The one recently assigned by the Federal Communications Commission (FCC) to FM is 88 mc to 108 mc. An older FM band, reaching from 42 mc. to 50 mc, is still in use, but it may be dropped in the near future.

The strength of radio waves is measured by their *amplitude*. And, just as in water there can be small ripples and great ocean rollers, so in radio there are large and small—or strong and weak—waves.

Suppose, now, a wire is suspended in the air at a distance from the radio transmitter. The radio waves will cause very small currents of electricity (*impulses*) to flow back and forth in this wire (which is acting as an *antenna*) at exactly the same frequency with which the radio waves are *oscillating* (this is comparable to the up-and-down movement of water waves). If the antenna is now connected to a suitable apparatus and the impulses are amplified and modified, they can be made to operate a loud-speaker. Such a set-up is the familiar radio receiver.

The situation is complicated, of course, by the fact that within receiving distance of most antennas there are not one but several radio transmitters. To make reception of one station at a time possible, the FCC assigns to each station in a vicinity a different radio frequency from that of its neighbors, so that the radio receiver can *select* one station at a time—a process known as *tuning*.

The human ear cannot hear the radio waves as they are transmitted, for waves of frequencies higher than about 16,000 cycles (16 kc) are inaudible. For audible messages to be broadcast, the sounds must first be passed through a radio transmitter, where these sounds modify the radio waves. This process of modification or change is known as *modulation*. The difference between FM (*frequency* modulation) and AM (*amplitude* modulation) lies in the means by which this modulation is accomplished.

Suppose it were desired to broadcast a single note, such as middle-A on the piano, which has a frequency of 440 cycles. Suppose further that this note were to be sent out over a station assigned a radio wave (known as the *carrier* wave) of 1000-kc frequency. There are two ways in which the note can be broadcast:

In the AM system, the *amplitude* of the carrier waves would be increased and decreased the required 440 times each second. The radio waves would continue to be broadcast at the original 1000 kc frequency.

The FM broadcasting set-up is somewhat different. A station broadcasting at a nominal frequency of 1000 kc actually sends out this frequency continuously only when nothing is being broadcast, that is, when the carrier wave is not modulated. It would broadcast our chosen middle-A tone by modulating the *frequency* of the radio waves from say 925 kc to say 1075 kc, 440 times each second. If it were desired to broadcast the same tone, but not so loudly, the 1000 kc carrier would be modulated only from say 950 to 1050 kc, but still at the 440 cycle rate, and with the original amplitude.

Obviously, different types of receivers are needed for the two different types of broadcasting. An AM receiver cannot ordinarily make audible an FM broadcast, nor can an FM receiver reproduce AM broadcasting.

ADVANTAGES OF FM

Without going into the engineering whys and wherefores, it can be stated that the FM system of broadcasting has several advantages over AM. With FM it is *possible* to achieve higher fidelity, a fuller dynamic range, and a greater ability to suppress interference including disturbances from static and from the signals of other stations.

FIDELITY: FM stations are capable of broadcasting practically the entire range of frequencies which can be heard by the human ear. It should be made clear, however, that this high fidelity is available to the listener only if his receiver is a high-fidelity instrument; all FM receivers cannot be expected to reproduce the high fidelity which can be broadcast by FM stations. Furthermore, not all

FM radio stations are capable of broadcasting practically the entire range of frequencies heard by the human ear, and a properly designed FM receiver has the property of suppressing static. These improvements over AM, plus the low installation and operating costs of an FM transmitter, make it possible and highly feasible that organizations and schools may set up and transmit non-commercial broadcasting stations, free of the singing commercials and patent medicine advertisements.

FM programs are themselves high fidelity; an FM station broadcasting an ordinary phonograph recording can send it out with no greater fidelity than was in the recording to start with. It should be noted in this connection that as a result of FM's high fidelity, a wide range of overtones can be reproduced, with the result that the timbre of musical instruments and the human voice can be duplicated faithfully.

DYNAMIC RANGE: In AM broadcasting, it is common to *monitor* (regulate) the loudness of the program at the sound booth, before it actually goes on the air. This results in an "ironing out" of the sound level, with loud passages being "toned down," and soft passages being "brought up." This is necessary in AM in order to raise the volume of the soft passages above the background of static, and to prevent distortion of the loud passages. As a result of monitoring, the listener receives a "censored" version of the music as played In FM, since there is no background static, continuous monitoring is not necessary, and FM broadcasts can be sent out with a full dynamic range.

STATIC: The familiar hiss and crackle which comes through on all AM receivers is known as *static*. In AM, if the radio waves of the station tuned in are much more powerful than the static, then the static will be practically inaudible. But if the static is relatively strong—as when there is a nearby thunderstorm, or when a sparking motor is in the vicinity—tolerable AM reception will be impossible.

A properly-designed FM receiver, however, has the property of suppressing static when it is tuned to an FM station. This does not mean that FM can eliminate all static under all conditions of use. But a good FM set with a good FM antenna and within the service range of an FM transmitter completely suppresses a great deal of static and makes the remainder far less audible than it is on AM.

INTERFERING STATIONS: Two important characteristics of FM broadcasting contribute to the fact that there is far less interference from stations other than the one to which the radio receiver is tuned. In the first place the new FM band which stretches from 88 mc to 108 mc is nearly a hundred times as wide as the AM band, which has a range of 535 kc to 1605 kc (or .535 mc to 1.605 mc). For this reason, stations in a broadcast area are relatively farther apart, in terms of cycles, in FM than in AM.

Another advantage the FM band has in this respect depends on the limitation of the distance at which interefence is produced at high frequencies. At AM frequencies, a broadcast station can be heard well in a relatively small area—sometimes as little as ten miles in radius—known as the primary service area of the station. But there is, in addition, a so-called secondary service area, extending to a radius of up to thousands of miles around the station, in which the broadcast is heard rather poorly and may be audible only part of the time. This secondary service is the only kind available in some areas, particularly in the Midwest, but it also constitutes a nuisance which interferes with primary service areas.

FM frequencies have no such interference area. A station may be heard well for about 100 miles from the source (somewhat past the horizon) and—with rare exceptions—no farther. Thus in FM, two stations can be assigned to exactly the same frequency, provided they are 200 miles or more from one another, without danger of interference.

Even if the FM stations are closer together, only the stronger station will be heard on a given frequency, because FM receivers have the property of selecting the stronger and rejecting the weaker of the stations.

MORE STATIONS: Because of the width of the FM band and other properties of FM, as discussed above, it becomes possible to put on the air, in any given area, many more FM stations than would be possible with the AM system, without interference from other stations.

DISADVANTAGES OF FM

Along with the advantages of FM, there are also some drawbacks:

OBSTRUCTIONS: The ultra-high-frequency radio waves which have been allotted to FM do not have the property, as have the lower frequencies of AM, of "bending around corners." For this reason, if there is an obstruction such as a mountain, or even a tall building, between the transmitter and the receiver, FM reception will be difficult and may be impossible. This condition can sometimes be remedied by the installation of an FM antenna, but a special type of antenna, much more costly than an AM aerial, is required.

RANGE: As has been mentioned before, the range of FM broadcasting is limited to a radius of about 100 miles around the transmitter, even in level country. AM, on the other hand, has a *secondary* service area which, while it does not give good reception, does give some service over a far broader area. And there are portions of the country—particularly in the Midwest—where no broadcasting stations are located except hundreds of miles away, and where the secondary service of AM is the only service available. It is unlikely that FM service to these thinly-populated areas will be practical for some years; they would have to continue to be serviced by AM.

As opposed to this, however, it should be pointed out that the installation and operating costs of an FM transmitter are generally much lower than those of an AM station, consequently it is feasible to operate an FM broadcaster for a much smaller audience.

FM RECEIVERS

The full advantages of FM cannot be reaped by just any FM receiver. As with AM sets, the quality of FM receivers on the market varies from very good to very poor. The consumer is well advised, therefore, to

Watch for . . .

Work on the following reports, among others, is either now under way or scheduled to begin soon:

Refrigerators
Washing Machines
Cameras
Fountain Pens
Flashlight Batteries
Slide Viewers and Projectors
Jeep Station Wagon
Wall Cleaners
Record Changers
Dentrifices
Contact Lenses
Vacuum Cleaners
Photoelectric Exposure Meters

refrain from buying the first FM set he sees, just because it is FM (see page 227).

As a bare minimum, an FM set should have the following characteristics:

- It should be sensitive enough to receive all FM stations within its service range.
- The reception should be free from static and relatively free from other interference when the receiver is tuned to a station.
- The tone should be good enough so that speech is reproduced clearly.

High fidelity and great dynamic range cannot be expected from the cheaper FM receivers. The consumer who considers these factors important has to pay a relatively high price for them.

FM'S STATUS

Today FM is no longer in the experimental stage. It does offer certain definite advantages over AM. Whether or not any individual can utilize these advantages depends mainly on where he lives.

It is CU's considered judgment that consumers who are now within FM range, or who expect to be within the service range of FM stations within the next few years, would be unwise to purchase an expensive radio without FM. At this time, some FM coverage is provided for the majority of the population of the country, and licenses are being granted continually in new localities. It is true that FM stations are now broadcasting only part of the day, and programs consist for the most part of good recorded music, simultaneous broadcasts with AM stations in the same area, and occasional news broadcasts. In some ways this is a blessing, for most original FM broadcasts are on a sustaining basis, and there are no commercials to mar the programs. But is is to be expected that, as more FM receivers are sold, advertisers will begin buying FM air time, and many FM stations will be established on the commercial footing now common to AM radio. Even so, there is hope. Because of the low installation and operating costs of an FM transmitter, it is possible that groups of persons, or schools or municipal governments, will set up non-commercial broadcasting stations free of the singing commercial and the patent medicine ad.

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TELEVISION

CU's engineers tested two television receivers and found neither worthy of recommendation

The much-talked-of $100 television receiver, after a brief but noisy publicity campaign, has joined the 5¢ cigar as a thing of the past. Not that the $100 receivers had much to offer during their brief moment in the sun. In one of the large New York City department stores where the sets were being demonstrated for a few days, crowds of "lookers" were so great that they had to be held back by the police, but few stayed long enough to fill in order blanks.

Those who did order—among them a Consumers Union shopper—have received their *Viewtone* television sets at the $100 price. But by August, when CU got its second *Viewtone*, the price had gone up to $169.95. The other postwar brand, the *Andrea*, cost $125.

Just how good are these low-priced television receivers?

The best that can be said for either of the two models tested is that it is not good enough to be recommended except under very special circumstances, and then only with very serious reservations.

Both the *Andrea* and the *Viewtone* were table model receivers with relatively small screens—5 inches and 7 inches respectively. Both were for black-and-white television only, along with accompanying "sound track." Neither these—nor, for that matter, any other television receiver now being produced commercially—can receive color television, which experts predict may make the black-and-white reception now available obsolete within a very few years.

DON'T PURCHASE HASTILY

The most important thing the buyer can learn from these two receivers is that the purchaser must be as firm as necessary with the dealer, to insure himself against paying the full price of the television set until it is playing satisfactorily *in his home*, and that he has a money-back guarantee if the set does not perform satisfactorily in his home.

This is important because, besides any faults the set may have due to basic design and construction, television reception is next to impossible in many locations because of the peculiarity of the location.

It is often necessary for the serviceman to spend many hours experimenting with different antennas and antenna positions in order to find one that produces satisfactory pictures *on all stations*.

Without a doubt, a dealer who has to install a number of television receivers is in a better position to cover the risk of poor location than the purchaser who has to add the cost of antenna to the cost of a single receiver. In brief, while regular radios are a safe item for "package" purchasing, the television set should be bought as installed and functioning in the buyer's home.

Under these conditions, and *these conditions only*, it is well worth while for the purchaser to pay $25 extra for the antenna and the installation—if it works.

NEITHER SET RECOMMENDED

Concerning the two television receivers examined, CU cannot recommend either one. In fact, the *Viewtone* was definitely "Not Acceptable."

Two samples of the latter were examined, and both were found to produce poor pictures, poor sound, and very loud electric hum, among other deficiencies. Of importance also is the fact that workmanship and construction were very unsatisfactory on both.

One sample of the *Viewtone* had little rubber-headed nails for feet. These were designed to protect the table underneath from the heavy, raw screws which protruded from the bottom of the cabinet. Unfortunately, the "feet" fell out in short order. Another sample was incorrectly assembled. The viewing tube faced the front of the receiver at an angle. The wood used for the cabinets was of a quality below that of "borax" furniture; the back cover was plain cardboard.

While there was no warning label whatsoever on one instrument, the warning sign, *"Danger—High Voltage—Do Not Remove"* was pasted

on the back of the other with such evident disregard for its importance that it fell off. No less typical was the fact that there was no name plate of any kind on either sample to tell the manufacturer's name, the model number, current consumption, and other pertinent information.

The *Andrea,* which was of prewar design and had to be converted (by a factory representative) to the newly assigned television frequencies, performer reasonably well. Its greatest deficiency was its very small screen. The sound quality also left much to be desired. However, in exceptional cases, such as confinement in the home, the *Andrea* does give one an idea of what television looks and sounds like.

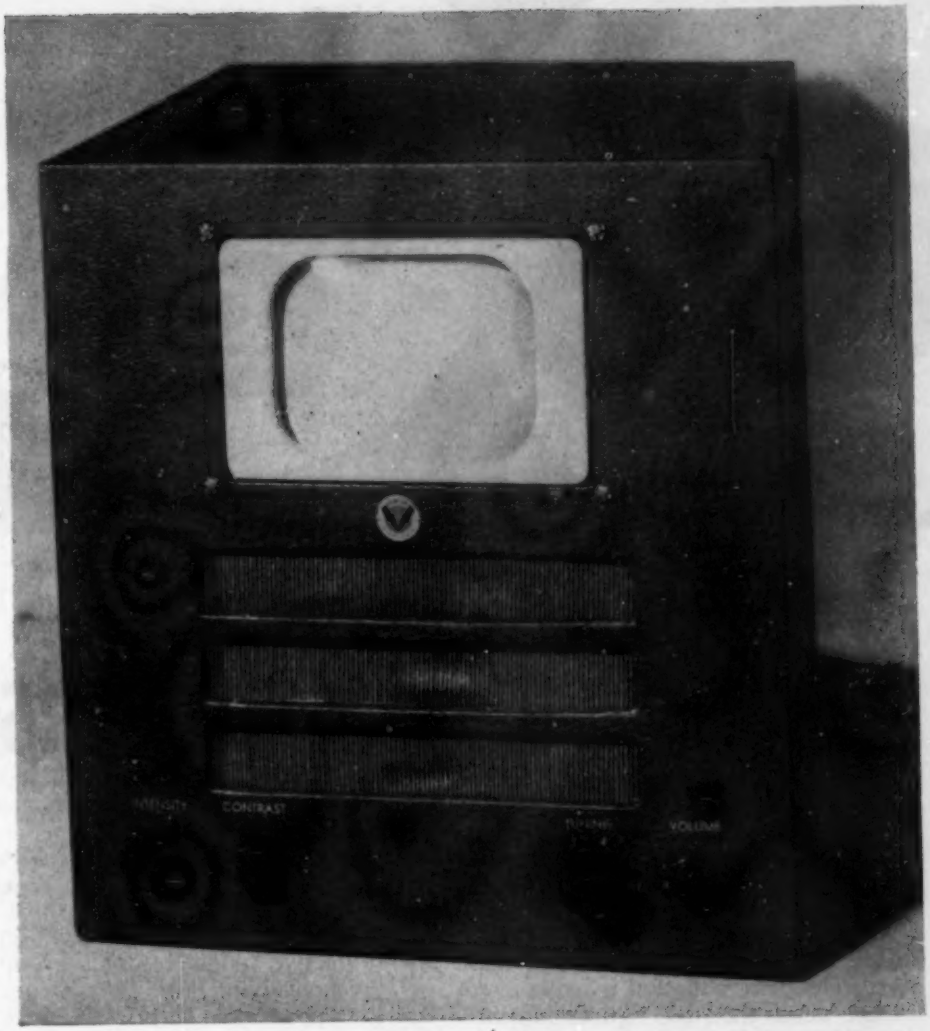
TELEVISION AND HOME MOVIES

A television set may well be compared to a home movie with sound, except that there is no bother about getting the film, setting up the projector, running the picture, dismantling the projector, and returning the film. With television, all one has to do is turn on the set and tune in the picture. To this advantage may be added the feature of immediacy in the viewing of sports events and other news.

On the other hand, the quality of television pictures does not, as yet, compare with the quality of even 8-mm home movies on the same size screen. And the observer is limited to viewing only during the few hours a day when television is broadcast, in the relatively few places where coverage is available at all. Furthermore the selection of subjects is very limited, so that the spectator must take what is offered at the moment, rather than what he would prefer to see.

One of CU's engineers, who has witnessed a demonstration of Columbia color television, reports that the pictures shown by this process compared well with color movies. Of course, color television is still in the experimental stage, and the pictures shown by Columbia were not a live pick-up but rather televising of a colored movie film.

It is well to remind consumers, at this point, that color receivers and transmitters won't strike the consumer market for another two years—if then. But when color does come out, the sets now available will not be able to receive it at all. CU concludes that the buyer's best bet is to wait until color television sets become available to the general public —or at least until there are better black-and-white sets than the current ones.



CU's engineers rated this VIEWTONE *television receiver, currently selling for $169.95, "Not Acceptable." The set produced poor pictures, poor sound and a very loud electric hum, among other deficiencies.*

"Garden of Miahati" Perfumes Manufactured in New York

PERFUMES represented as coming from "the famous gardens of Miahati in Hawaii, where the exotic vari-colored hibiscus and jasmine mingle with honeysuckle and orange blossoms in riotous fragrance" were actually manufactured in New York, the Federal Trade Commission found as it issued an order prohibiting misrepresentations as to the origin of perfumes.

The order is directed against Miahati, Inc., and Andrew Apicella, trading as Oceanic Import Co., both of 377 Fourth Avenue, New York, and Abbot Manufacturing Co., Inc., 551 Fifth Avenue, New York. It orders the respondents to cease and desist from representing that perfumes compounded in the United States are of Hawaiian origin.

The Miahati firm manufactures and sells perfumes under the brand names of *"Soul of Flowers," "Honolulu," "Waikiki" and "Pikaki."* The Commission also found that there is no such place as the "Gardens of Miahati" in Hawaii.

The REMINGTON DE LUXE MODEL 5 *(left) was rated "Not Acceptable." It is generally a poorly-designed and constructed machine in comparison with others on the market, such as the* REMINGTON NOISELESS *(center) and the* ROYAL ARROW *(right). Both of the latter typewriters are comparatively well constructed and easy to operate.*

PORTABLE TYPEWRITERS

Six out of eight typewriters tested receive rating of "Acceptable"

Aside from drastic revisions in their price tags, no radical changes have appeared in postwar typewriters. The price situation is made even more acute than the figures indicate by the fact that sizeable trade-in allowances on old machines and discounts from list price were common practice before the war, whereas now when there is a figure on the tag, the dealer means just that, and not one cent less. Furthermore, typewriters are still very scarce, and the purchaser who needs one quickly has to take pretty much what he can find, regardless of size of type (elite or pica), brand and model.

Inspection of the typewriters at the factory level appears to be very poor, and if the eight typewriters CU was able to purchase were typical, the consumer's chances of getting a well-adjusted machine are small. CU's ratings are based on operation after adjustment to make them work as well as possible.

WHAT IS "GOOD?"

Aside from obvious—and important—mechanical and convenience factors, the thing that makes a typewriter "good" is rather difficult to define. It has to do largely with the machine's "feel"—how smoothly it works, what effort is required to type, whether or not rapid typing is possible, etc.

CU decided after some experimentation to base its rating of "feel" on the subjective judgments of a group of technically-trained typewriter users. Apparently "feel" is much harder to define than to rate, for the typists were in complete agreement as to "good" and "bad" despite the fact that they did their typing without consultation with one another, and that their abilities ranged from expert touch-typing to "hunt-and-peck."

Unanimously rated "good" with respect to feel was the *Royal Quiet De Luxe* which, in the opinion of the typists, behaved more like a standard office typewriter than any of the others tested. The *Underwood Universal* and the *Remington Rand Model 5* were just as unanimously rated "Not Acceptable." Between these extremes, and all rated "Acceptable" in varying degrees were the *Remington Noiseless*, the *Smith-Corona Silent*, the *Smith-Corona Sterling*, the *Royal Arrow*, and the *Hermes Baby*, in that order.

Aside from its feel, certain conveniences are more or less important to you, depending on your needs.

MARGIN: The *Magic Margin* at the left of the *Royal* portables is the ultimate in simple margin adjustment; the margins of other typewriters are harder to set, some of them requiring rather difficult manipulation.

TABULATOR: Most portable have manually-set tabulator adjustments which make possible advancement of the carrier to one of several predetermined points. The *Remington* Model 5 substitutes for this feature a "Self Starter," which advances the carriage five characters at a time; it is slow and unsatisfactory for anything more than paragraphing. The *Hermes* has no tabulator.

SHIFT: There are two kinds of shift mechanism in portable typewriters: in one the entire "key basket" is lowered to type capital letters; in the other, the carriage is raised. The basket shift is the easier to operate.

ERASURE: A paper bail which cannot be shifted from directly in front of the line just typed interferes with erasure. In some typewriters, this problem is solved by omission of the paper bail, two "fingers" which hold the paper in place by means of springs being substituted. On the *Royals*, the bail is ingeniously hinged and sprung, so that it can be lifted clear. On the *Underwood* and the *Smith Coronas*, however, the paper bail interferes with erasure and makes insertion of paper difficult.

TOUCH CONTROL: All the typewriters tested except the *Hermes* were equipped with "touch control," a device which is supposed to make the machine adaptable to the individual typist's touch, whether light or heavy. Most of the touch controls had little influence on ease of typing; good machines were good, and bad were bad, whether the touch was light or heavy. On "blindfold tests," typists

could not tell the difference on some typewriters.

MINOR CONVENIENCES: Among features which are pleasant but less important are such things as well-located carriage return lever and ratchet release, easily-operated shift lock, glare-free keyboard, well-designed ribbon changing mechanism, paper alignment stop, two-color typewriter ribbon adjustment, and carriage centering device.

WEIGHT: Light weight is an obvious asset to a portable typewriter, and in this respect, the *Hermes* has no rival. Whereas the other "portables" weighed from 15½ to 18 pounds, the weight of the *Hermes* was a mere 8½ pounds, and its dimensions were such that it could be carried easily in a briefcase.

Obviously, if the *Hermes* works at all well, it is the ideal typewriter for those to whom portability is a major factor. And, for what it is, the *Hermes* does a remarkable job. Its touch is not to be compared with that of an office machine, or of a good, heavy portable, but typing on it is easy enough for all except very fast typists or those who do a great deal of work. In price, the *Hermes* ($51.47) is lower by over $13 than any of the other portables tested.

The only truly "noiseless" construction was that of the *Remington Noiseless*, which was judged excellent both as to "feel" and convenience. The *Royal Quiet* and the *Smith-Corona Silent* had conventional construction, but they were less noisy than the other typewriters.

HOW TO CHOOSE

In a previous report on portable typewriters (August, 1941), CU recommended a home test. Few if any dealers will permit this today, and about the best a prospective purchaser can do (after he has located a typewriter) is to make a few simple tests at the store. Observe the action in general; see whether the "feel" suits you. Type a complete alphabet and symbols, both lower case and capital (shift locked), watching for keys that stick. Inspect the work to see that it is clean, has a satisfactory character, that the characters line up, and that the spacing is consistent.

Check the left-hand margin to see that it lines up, no matter how the carriage is returned—whether by back-spacing, a gentle push, or a vigorous slam of the carriage. Try inserting a business envelope (No. 10, 9½ inches long; some typewriters will mutilate it. Check for the presence of conveniences as described above, and see that they all work.

If you purchase from a mail-order house, you are buying more-or-less "blind," so far as the individual machine you order is concerned. Unless you have no other choice, personal selection of your portable is a much better practice.

The ratings which follow are based on controlled typing tests by a group of technicians, plus careful examination of the characteristics of the typewriters. Only one sample of each machine could be bought in time for test. Prices given include Federal Excise tax.

ACCEPTABLE

(In estimated order of over-all quality)

Royal Quiet De Luxe (Royal Typewriter Co., NYC). $76.57. Character of typing, good; easiest machine to operate. Good construction. Quiet but not noiseless typing. Extra-large key for shift lever may be uncomfortable.

Remington Noiseless (Remington Rand, Inc., NYC). $93.53. Character of typing, good; easy to operate. Good construction. Noiseless construction, but keys rattled slightly in use. Special ribbon spool difficult to replace.

Smith-Corona Silent (L. C. Smith and Corona Typewriters Inc., Syracuse, N. Y.). $82.51. Character of typing, good; easy to operate. Good construction. Quiet but not noiseless typing. Presence of paper bail makes erasure difficult; bail can be removed as springs continue to hold paper.

Smith-Corona Sterling (L. C. Smith and Corona Typewriter Inc.). $76.57. Character of typing, good; fairly easy to operate. Good construction. Similar to **Smith-Corona Silent** but noisier.

Royal Arrow (Royal Typewriter Co.). $64.70. Character of typing, good; fairly easy to operate. Good construction. Average typing noise. Key bars rattled slightly in use. Similar to **Royal Quiet De Luxe**, but not as well made.

Hermes Baby (E. Paillard Co., Switzerland; distrib. American Bolex Co., NYC). $51.47. Character of typing, good; fairly easy to operate. Very small and light in weight (see text). Average typing noise. Key bars rattled slightly in use. Good construction. Some conveniences lacking: no touch control; one-side shift-lock release; only one color ribbon; no tabulator.

NOT ACCEPTABLE

Remington De Luxe Model 5 (Remington Rand). $64.70. Character of typing only fair; difficult to operate. Irregular spacing. Very noisy typing. Gears activating type bars noisy. Required special short ribbon. This seemed to be a generally poorly-designed and constructed machine in comparison with others available.

Underwood Universal (Underwood Elliot Fisher Co., NYC). $64.70. Character of typing only fair; very difficult to operate. Very noisy typing. Key bars rattled badly in use. Key bars had tendency to stick. Design and construction unsatisfactory.

The HERMES BABY *may be a "Best Buy" if portability is a major necessity. The* UNDERWOOD UNIVERSAL *(center, left) was rated "Not Acceptable." The* SMITH-CORONA STERLING *(center, right) had good construction and was fairly easy to operate. Of the typewriters tested, the* ROYAL QUIET DE LUXE *(right) was the easiest to operate.*

TYPEWRITER RIBBONS

Of 125 brands examined by CU experts, only three ribbons passed all tests

The appearance of a typewritten page depends largely upon the skill of the typist, the quality and state of repair of the typewriter, and the cleanness of the letters. But it depends also on the typewriter ribbon.

When there is a new ribbon in the machine, are the typed lines smudgy? Have you found that ribbons need replacement more often than they used to? Do the machines have to be cleaned more frequently than before, in order to keep small loops such as those on the "e" and the "a" from filling in? In other words, have you the feeling that ribbons are not what they were before the war?

If you have noted such deterioration, you can probably blame it on the typewriter ribbon, extensive tests made by CU on 125 brands of typewriter ribbons indicate. For whereas CU's last report on typewriter ribbons (*Reports*, April 1941) showed 79 of the 109 tested to be satisfactory in all respects, only three of the 125 brands in the present batch passed all the tests in all the samples tested, and 113 of the 125 showed major defects. It is but slight consolation that the basic fabric of the ribbons seems to have been improved; none of the new ribbons were torn through in the new tests, while 16 were previously rated "Not Acceptable" on this account.

All the qualities that you can expect from a typewriter ribbon can be measured more or less quantitatively in the laboratory. Let us examine these one by one.

FIRST LINES

Sometimes, when a new ribbon is put into a typewriter, the newly-typed page looks even, dark and clean. Sometimes, however, the letters look smudged and generally dirty; it takes a good many pages of typing with such a ribbon before the typed material loses its smudgy appearance.

The quality of the first lines is easy enough to measure. To do so, two lines of the letter "R" were typed with an electric typewriter (thus obtaining the same impact on each letter) on a standard, smoothly-finished paper. The lines were examined both with and without a magnifying glass for sharpness, darkness and evenness of the letters, and smudginess of the inking.

Of the 125 brands, 93 were satisfactory with respect to the first lines produced. Smudgy first lines were considered a major defect.

WEAR-DOWN

A ribbon that starts out well, but doesn't last long, soon producing dingy, gray typing is both a nuisance and an unnecessary expense. To measure wear-down, 100 lines, with 30 letters "R" per line, were typed on an electric typewriter with the ribbon attached in such a way that each letter on a line was typed through exactly the same spot in the ribbon as the corresponding letter on the line above (that is, 100 letters "R" were typed at each of 30 spots). It was then a simple matter to find, by "electric eye" (a photoelectric reflectometer), the line corresponding to the degree of grayness which a jury of typists and others experienced in handling typed manuscripts judged as the minimum to produce adequate legibility. A ribbon was judged satisfactory if, by the 75th line, the type produced under these conditions was dark enough to pass the test.

Of the 125 brands of ribbons, only 33 were satisfactory with respect to wear-down. Too rapid wear-down was considered a major defect.

RECOVERY

Every time the key strikes the ribbon on a typewriter, the ribbon is advanced, so that each bit of the ribbon rests for a shorter or longer period before it is re-used. In this rest period, what is known as "recovery" takes place, enabling the ribbon to regain some of the inking it lost at the point where it touched the paper. Recovery results from good ink formulation which permits a redistribution of ink over the ribbon's surface.

To test for recovery, each ribbon was allowed to rest for 20 minutes after the wear-down test, then the line of type it produced was compared photoelectrically with wear-down lines previously made. A ribbon with satisfactory recovery characteristics should, at the end of this test, produce a line which is as dark as the 60th line produced in the wear-down test.

Fifty-five of the 125 ribbons tested were found satisfactory with respect to recovery characteristics. Good recovery, while it is desirable, was considered to be of less importance than clarity of type and wear-down.

TYPE FILLING

Whether or not small loops in the type keys tend to become filled, and so to appear solid on the typewritten page depends largely on the milling and the formulation of the ink used in the typewriter ribbon. To test for the ribbons' tendency to fill type, 800 letters "e" were written consecutively, with an electric typewriter. Ribbons were considered satisfactory with respect to type-filling characteristics if the loops were still clean after 800 letters had been typed.

Of the 125 ribbons, 78 proved satisfactory in the type-filling test. The necessity to clean the type frequently because of the ribbon's tendency to fill type is a nuisance, and it was considered in the ratings.

FABRIC

DURABILITY: An important requirement of a typewriter ribbon is that it should not tear or wear through during the period in which it is in use. None of the ribbons tested fell down in this respect; all were in good condition at the end of the wear-down test. There appears, incidentally, to have been a major improvement in the durability of typewriter ribbons since CU last tested them in 1941. At that time, 16 of the 109 ribbons were rated "Not Acceptable" because they tore in the course of the wear-down test. A good platen, replaced as soon as there are evidences of wear, contributes much to the ribbon's durability.

THREAD COUNT: Other factors being equal, a ribbon made of tightly-woven threads tends to deliver a cleaner, sharper impression than one which is loosely woven. A total thread count (warp plus filling) of 300 per square inch, appears to be the minimum for satisfactory performance. All the ribbons tested were judged satisfactory with respect to thread count.

MATERIAL: Cotton is by far the most popular fabric for use in typewriter

ribbons, though silk—and more recently, nylon—are used for some special types of work. CU's tests were limited to cotton ribbons of medium weight.

THICKNESS, LENGTH, EDGES: The thickness of typewriter ribbon affects two things: its strength and the clarity of the impressions typed through it. All the ribbons tested were within the allowable limits for medium-weight cotton ribbon.

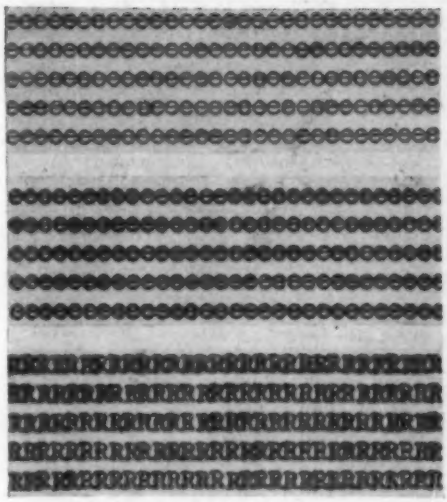
All popular American typewriters, with the exception of the *Remington* portable, are built to accommodate 11- to 12-yard ribbons. (The portable *Remington* takes a 6-yard ribbon.) Many of the ribbons fell considerably short of this maximum, as noted in the ratings.

To run through the machine smoothly and to wind easily and regularly on the spools, it is desirable that the ribbons be smooth and have no wavy edges. Many of the samples tested were slightly defective in this respect, though not seriously.

INKING

Various degrees and types of inking are applied to typewriter ribbons for different uses. Generally, these are marked on the box as "Light," "Medium" and "Heavy." A heavily-inked ribbon starts off darker and tends to stay darker for a longer time than a medium or lightly-inked ribbon. Along with the dark impression, however, there is often a tendency toward smudginess and lack of clarity. For most work, a medium-inked ribbon is more satisfactory, even though it may be somewhat less economical. In particular, heavy inking is not recommended for elite type (the smaller of the two standard type sizes), though it is satisfactory for pica type. Light ribbons are sometimes used for work where the sharpness of the impression is of paramount importance (as in legal briefs, for example), and where economy is not a major factor.

In the formulation of the ribbon ink, it is necessary that the pigment be finely ground, evenly distributed and made up without an excess of oil. Too much oil in the ink formula gives a smudgy impression, and in extreme cases, the oil strikes through to the back of the typed page. No excessively oily inks were noted, though poorly formulated inks were unquestionably responsible for some of the poor typing characteristics noted.



Compare the good characteristics of the top line with respect to type-filling with the poor characteristics of the center line. The bottom lines of R's serve as an illustration of first-line smudginess.

To check further on the inks, type samples were subjected to the light of a "fadeometer" for 48 hours—an approximate equivalent of 140 hours in strong sunlight. No serious fading was noted.

Of the ribbons tested, 64 were for standard typewriters, 61 for portables. Although in previous tests it had been found that, on the whole, standard ribbons were of higher quality, and it was therefore a good idea to buy standard ribbons for portable typewriters, no such result was obtained in the current test series. The two types of ribbons were about equally good over-all, but there was little correlation between the quality of the standard and the portable ribbon of a given manufacturer.

HOW CU TESTED

All the attributes discussed above were tested and scored by CU in making the evaluations of typewriter ribbons. In the computation of the final ratings, wear-down and clarity of impression were given greater weight than other characteristics.

As mentioned previously, only three of the 125 ribbons tested were found uniformly satisfactory in all respects; nine others were satisfactory in wear-down and clarity, but fell down with respect to less important characteristics. If you're not fortunate enough to find one of these when you need a new ribbon, it becomes a matter of your selecting one having those defects which are least annoying to you.

CU's "Acceptable" ribbons are divided into three categories: ribbons which were found satisfactory in all respects; those which were satisfactory with respect to both clarity and wear-down, but did not pass tests on type-filling or recovery or both; and those which failed in either the clarity or the wear-down test. Ribbons in the "Not Acceptable" group failed with respect to both clarity and wear-down.

In CU's first series of tests, one ribbon of each brand and type was examined, and the ribbons were classified. A second series was then performed on two additional samples of each of the ribbons in the two groups having the highest ratings, to check on their uniformity. Only those brands which passed the check-test series were allowed to remain in the highest categories.

Standard Typewriter Ribbons

ACCEPTABLE

(In estimated order of over-all quality).

The following ribbon was found satisfactory in all respects:

Value (Royal Typewriter Co., NYC). $1 for 12.4 yd. Available nationally.

The following ribbons were found generally satisfactory except for minor defects as noted:

Regalrite Princess-Q (Regal Typewriter Co., NYC). 65¢ for 12.3 yd. Poor type-filling characteristics. Available nationally.

Aristo Cat. No.—3909 (Sears, Roebuck). 83¢ plus postage for 11.5 yd. Poor recovery; wavy edges. Available by mail order.

Remrandco (Remington Rand, Bridgeport, Conn.). $1 for 12.2 yd. Poor recovery. Available nationally.

Paragon (Remington Rand). 75¢ for 12 yd. Poor recovery. Available nationally.

The following ribbons, while they were considered "Acceptable," had one or more major defects, as indicated:

Glider (Lerman Bros., NYC). 55¢ for 11 yd. Wear-down characteristics and appearance of first lines varied in different samples tested. Available at Lerman Bros., NYC and by mail order.

Wards Economy Quality Cat. No.—5706 (Montgomery Ward). 33¢ plus postage for 11.8 yd. Wear-down characteristics and appearance of first lines varied with different samples tested; poor recovery. Available by mail order.

Underwood Centennial (John Underwood & Co., NYC). 50¢ for 11.9 yd. Wear-down characteristics and appearance of first lines varied in different samples tested. Wavy edges; poor re-

covery and type-filling characteristics. Available nationally.

Perry's (Perry Printing & Stationery Co., NYC). 65¢ for 11.9 yd. First lines smudgy.

Bundy Special (Bundy Typewriter Co., Philadelphia). 50¢ for 12 yd. First lines smudgy; poor type-filling characteristics.

Crowfoot (Old Town Ribbon & Carbon Co., Brooklyn). 75¢ for 12.2 yd. First lines smudgy. Available nationally.

Stafford's Ser-Vus (S. S. Stafford Inc., NYC). 65¢ for 11.7 yd. First lines smudgy; poor type-filling characteristics. Available east of the Mississippi and on the West Coast.

High Grade Universal Interchangeable (Hale Bros., San Francisco). 35¢ for 8.7 yd. First lines smudgy; poor type-filling characteristics. Ribbon wound on wooden spool with no sides. Available at Hale Bros. Dept. Store, San Francisco.

Regalrite Duchess-Q (Regal Typewriter Co.). 50¢ for 12 yd. First lines smudgy; poor type-filling characteristics. Available nationally.

Guild Hall (Guild Stationery Products). $1 for 16.2 yd. Poor wear-down.

Webster's Battleship (F. S. Webster Co., Boston). 75¢ for 12.9 yd. Poor wear-down and recovery. Available nationally.

Regalrite Empress-Q (Regal Typewriter Co.). $1 for 12 yd. Poor wear-down. Available nationally.

Old Town Hermetic (Old Town Ribbon & Carbon Co.). $1 for 12.3 yd. Poor wear-down. Available nationally.

Marvello Cat. No.—3920 (Sears, Roebuck). 46¢ plus storage for 11.6 yd. Poor wear-down and wavy edges. Available by mail order.

Old Town Dawn (Old Town Ribbon & Carbon Co.). $1.25 for 12.6 yd. Poor wear-down. Available nationally.

Eureka (Mittag & Volger Inc., Park Ridge, N. J.). $1.38 for 11.8 yd. Poor wear-down. Available nationally.

Duplico (Duplico Mfg. Co., New Brunswick, N. J.). 25¢ for 12.7 yd. Poor wear-down.

Dream (Bundy Typewriter Co., Philadelphia). 50¢ for 11.6 yd. Poor wear-down.

Underwood Elliott Fisher Purple Box (Underwood Elliott Fisher Co., NYC). $1.25 for 11.9 yd. Poor wear-down. Available nationally.

Carter's Ideal (Carter's Ink Co., Boston). $1 for 11.8 yd. Also available for 75¢. Poor wear-down and recovery. One of three ribbons tested had wavy edges. Available nationally.

Webster's Star (F. S. Webster Co., Cambridge, Mass.). $1 for 12.1 yd. Poor wear-down. Available nationally.

Thrift (Ault & Wiborg Carbon & Ribbon Co., NYC). 65¢ for 12.2 yd. Poor wear-down.

Carter's Midnight (Carter's Ink Co.). 75¢ for 12.3 yd. Poor wear-down and recovery. Available nationally.

Wonder (Kee Lox Mfg. Co., Rochester, N. Y.). $1.25 for 11.6 yd. Poor wear-down and recovery. Available nationally.

Underwood Zephyr (John Underwood & Co., NYC). 50¢ for 12.3 yd. Poor wear-down and recovery; wavy edges. Available nationally.

Distinctive (Neidich Process, Burlington, N. J.). $1 for 12.8 yd. Poor wear-down and recovery. Available nationally.

Pinnacle (Columbia Ribbon & Carbon Mfg. Co., Glen Cove, N. Y.). 92¢ and $1.25 for 12 yd. Variable: poor wear-down and recovery on two ribbons tested; poor recovery, poor type-filling characteristics, first lines smudgy and wavy edges on one ribbon tested. Available nationally.

Copy-Right (A. Carlisle & Co., San Francisco). $1 for 12.3 yd. Poor wear-down. Available at A. Carlisle & Co. Stores, San Francisco and Reno.

Progress (Neidich Process). 67¢ for 11.7 yd. Poor wear-down. Available nationally.

Classic (Columbia Ribbon & Carbon Mfg. Co.). $1.50 for 16.2 yd. Poor weardown and recovery. Available nationally.

Autocrat (Goldsmith Bros., NYC). 75¢ for 11.9 yd. Poor wear-down and recovery. Available at Goldsmith, NYC.

Tagger (Mittag & Volger Inc.). 99¢ for 11.9 yd. Poor wear-down and recovery. Available nationally.

Underwood Elliott Fisher Red Box (Underwood Elliott Fisher Co.) $1 for 12.3 yd. Poor wear-down and recovery. Available nationally.

Burroughs (Burroughs Adding Machine Co., Detroit). $1 for 11.8 yd. Poor wear-down. Available nationally.

Horder's Red "H" Grade (Horder's Inc., Chicago). $1 for 11.8 yd. Poor wear-down. Wavy edges. Available at Horder Stores, Chicago.

Vogue (Royal Typewriter Co.). $1 for 12.2 yd. Poor wear-down and recovery. Available nationally.

Plenty Copy (Mittag & Volger Inc.). 83¢ for 11.9 yd. Poor wear-down and recovery. Available nationally.

Chancellor. 75¢ for 12.2 yd. Poor wear-down and recovery.

Guild (Guild Stationery Prod.) 90¢ for 11.7 yd. Variable: poor wear-down and recovery on one ribbon tested; poor recovery, poor type-filling characteristics, first lines smudgy on other ribbon tested.

Wards Supreme Quality Cat. No.—5719 (Montgomery Ward). 79¢ plus postage for 11.8 yd. Poor wear-down and recovery. Available by mail order.

Carter's Guardian (Carter's Ink Co.). 50¢ for 12.3 yd. Poor wear-down and recovery. Available nationally.

Manchester Woodstock (Woodstock Typewriter Co., Woodstock, Ill.). $1 for 11.9 yd. Poor wear-down and recovery. Available nationally.

Utility (Utility Supply Co., Chicago). 90¢ for 12.2 yd. Poor wear-down; wavy edges.

Herald Square (F. W. Woolworth Co.). 25¢ for 12.4 yd. Poor wear-down and recovery.

Wards De Luxe Quality Cat. No.—5712 (Montgomery Ward). 59¢ plus postage for 11.8 yd. Poor wear-down and recovery. Available by mail order.

Standard (S. S. Kresge). 29¢ for 10 yd. Poor wear-down and recovery.

Secretarial (L. S. Smith & Corona Typewriters, Inc., Syracuse, N. Y.). $1.25 for 12.2 yd. Poor recovery; poor typefilling characteristics; first lines smudgy.

Emerald (L. C. Smith & Corona Typewriters, Inc.). 75¢ for 11.7 yd. Poor recovery; poor type-filling characteristics; first lines smudgy.

Type Bar (L. C. Smith Typewriters Inc.). $1 for 11.9 yd. Poor recovery; poor type-filling characteristics; first lines smudgy. Available nationally.

Elk (L. C. Smith & Corona Typewriters Inc., Aurora, Ill.). $1 for 11½ yd. Poor recovery; poor type-filling characteristics; first lines smudgy.

Carnation (Miller-Bryant-Pierce). $1.25 for 11.8 yd. Poor recovery; first lines smudgy.

Bon Marche Unbranded. 50¢ for 11.8 yd. Poor recovery and poor type-filling characteristics; first lines smudgy. Purchased at Bon Marche, Seattle.

Stafford's Superfine (S. S. Stafford, Inc.). $1 for 11.9 yd. Poor recovery; poor type-filling characteristics; first lines smudgy; wavy edges.

Personality (Exchange Typewriter Shop, NYC). 50¢ for 12.9 yd. Poor recovery; poor type-filling characteristics; first lines smudgy.

Flint (Kee Lox Mfg. Co.). 75¢ for 12.2 yd. Poor wear-down; poor type-filling characteristics.

NOT ACCEPTABLE

The following ribbons were found to be generally poor, with defects as noted:

Autocrat Super AA Fabric (Goldsmith Bros.). $1 for 11.7 yd. Poor wear-down and recovery; first lines smudgy.

Kee Lox (Kee Lox Mfg. Co., Rochester, N. Y.). $1 for 12.2 yd. Poor wear-down and recovery; poor type-filling characteristics; first lines smudgy.

GB (Goldsmith Bros.). 50¢ for 11.8 yd. Poor wear-down and recovery; poor type-filling characteristics; first lines smudgy.

Rainbow (Columbia Ribbon & Carbon Mfg. Co.). 83¢ for 11.9 yd. Poor wear-down and recovery; poor type-filling characteristics; first lines smudgy.

Portable Typewriter Ribbons

ACCEPTABLE

(In estimated order of over-all quality).

The following ribbons were found satisfactory in all respect:

Regalrite Duchess-Q (Regal Typewriter

Co.). 50¢ for 12 yd. Available nationally.

Crowfoot (Old Town Ribbon & Carbon Co.). 75¢ for 11.9 yd. Available nationally.

The following ribbons were found generally satisfactory except for minor defects as noted:

Flint (Kee Lox Mfg. Co.). 75¢ for 11.9 yd. Poor type-filling characteristics. Available nationally.

Type Bar (L. C. Smith & Corona Typewriters Inc.). $1 for 10 yd. Poor type-filling characteristics. Available nationally.

Regalrite Princess-Q (Regal Typewriter Co.). 65¢ for 12.3 yd. Poor type-filling characteristics. Available nationally.

Paragon (Remington Rand). 75¢ for 12.4 yd. Poor recovery. Available nationally.

Carnation (L. C. Smith & Corona Typewriters Inc.). $1.25 for 12 yd. Poor recovery; poor type-filling characteristics. Available nationally.

The following ribbons, while they were considered "Acceptable," had one or more major defects as noted:

Perry's (Perry Printing & Stationery Co.). 65¢ for 11.1 yd. Weardown characteristics and appearance of first lines varied with different samples tested.

Marvello Cat. No.—4008 (Sears, Roebuck). 46¢ plus postage for 12.3 yd. Poor type-filling characteristics; first lines smudgy. Available by mail order.

Duplico (Duplico Mfg. Co.). 25¢ for 12.3 yd. Poor type-filling characteristics; first lines smudgy.

Glider (Lerman Bros.). 55¢ for 10.6 yd. Poor type-filling characteristics; first lines smudgy. Available at Lerman Bros., NYC and by mail order.

Emerald (L. C. Smith & Corona Typewriters Inc.). 75¢ for 11.9 yd. Poor type-filling characteristics; first lines smudgy. Available nationally.

Stafford's Superfine (S. S. Stafford, Inc.). $1 for 12.7 yd. Poor type-filling characteristics; first lines smudgy. Available east of the Mississippi and on West Coast.

Thrift (Ault & Wiborg Carbon & Ribbon Co.). 65¢ for 11.8 yd. Poor type-filling characteristics; first lines smudgy.

Vogue (Royal Typewriter Co.). $1 for 10.4 yd. Variable: poor recovery on one ribbon tested; poor weardown on other ribbon tested. Available nationally.

Burroughs (Burroughs Adding Machine Co.). $1 for 9.9 yd. Poor weardown. Available nationally.

Tagger (Mittag & Volger, Inc.). 99¢ for 11.8 yd. Poor weardown and recovery. Available nationally.

Remrandco (Remington Rand). $1 for 11.9 yd. Poor weardown. Available nationally.

Eureka (Mittag & Volger, Inc.). $1.38 for 12 yd. Poor weardown and recovery. Available nationally.

Old Town Dawn (Old Town Ribbon & Carbon Co.). $1.25 for 11.2 yd. Poor weardown. Available nationally.

Regalrite Empress-Q (Regal Typewriter Co.). $1 for 10 yd. Poor weardown. Available nationally.

Horder's Red "H" Grade (Horder's Inc.). $1 for 11.6 yd. Poor weardown. Available at Horder Stores, Chicago.

Aristo Cat. No.—3915 (Sears, Roebuck). 83¢ plus postage for 11.9 yd. Poor weardown. Available by mail order.

Secretarial (L. C. Smith & Corona Typewriters Inc.). $1.25 for 12 yd. Poor weardown. Available nationally.

Wonder (Kee Lox Mfg. Co.). $1.25 for 11.8 yd. Poor weardown and recovery. Available nationally.

Rainbow (Columbia Ribbon & Carbon Mfg. Co.). 83¢ for 11.8 yd. Poor weardown and recovery. Available nationally.

Carter's Guardian (Carter's Ink Co.). 50¢ for 11.6 yd. Poor weardown and recovery. Available nationally.

Lyncrest Super-Quality (W. T. Grant Co.). 49¢ for 11.6 yd. Poor weardown. Available nationally at Grant stores.

Underwood Corporation Purple Box (Underwood Corp.). $1.25 for 11.9 yd. Poor weardown and recovery. Available nationally.

Webster's Star (F. S. Webster Co.). $1 for 10 yd. Poor weardown and recovery. Available nationally.

Classic (Columbia Ribbon & Carbon Mfg. Co.). $1.50 for 16.3 yd. Poor weardown and recovery. Available nationally.

Carter's Midnight (Carter's Ink Co.). 75¢ for 11½ yd. Poor weardown and recovery. Available nationally.

Distinctive (Neidich Process). $1 for 10 yd. Poor weardown and recovery. Available nationally.

Ward's DeLuxe Quality Cat. No.—5729 (Montgomery Ward). 59¢ plus postage for 11.7 yd. Poor weardown. Available by mail order.

Underwood Zephyr (John Underwood & Co.). 50¢ for 11.7 yd. Poor weardown and recovery. Available nationally.

Underwood Elliott Fisher Red Box (Underwood Elliott Fisher Co.). $1 for 11.9 yd. Poor weardown and recovery. Available nationally.

Carter's Director (Carter's Ink Co.). 75¢ for 11.8 yd. Poor weardown; wavy edges. Available nationally.

Kee Lox (Kee Lox Mfg. Co.). $1 for 11.6 yd. Poor weardown; wavy edges.

GB (Goldsmith Bros.). 50¢ for 9.8 yd. Poor weardown and recovery. Available at Goldsmith Bros., NYC.

Plenty Copy (Mittag & Volger, Inc.). 83¢ for 11.8 yd. Poor weardown and recovery. Available nationally.

Ward's Supreme Quality Cat. No.—5733 (Montgomery Ward). 79¢ plus postage for 11.9 yd. Poor weardown and recovery; wavy edges.

Herald Square (F. W. Woolworth Co.). 25¢ for 9.8 yd. Poor weardown and recovery.

Progress (Neidich Process). 67¢ for 10.2 yd. Poor weardown and recovery. Available nationally.

Elk (L. C. Smith & Corona Typewriters Inc.). $1 for 11.9 yd. Poor recovery; poor type-filling characteristics; first lines smudgy. Available nationally.

Bon March Unbranded. 50¢ for 12.3 yd. Poor recovery; poor type-filling characteristics; first lines smudgy. Purchased at Bon Marche, Seattle.

Copy-Right (A. Carlisle & Co.). $1 for 11.6 yd. Poor weardown; poor type-filling characteristics.

Old Town Hermetic (Old Town Ribbon & Carbon Co.). $1 for 11.8 yd. Poor weardown; poor type-filling characteristics. Available nationally.

Value (Royal Typewriter Co.). $1 for 10.4 yd. Poor weardown; poor type-filling characteristics.

Wards Economy Quality Cat. No.—5724 (Montgomery Ward). 33¢ plus postage for 6.8 yd. Poor weardown and recovery; poor type-filling characteristics. Available by mail order.

Dream (Bundy Typewriter Co.). 50¢ for 12 yd. Poor weardown and recovery; poor type-filling characteristics.

Webster's Battleship (F. S. Webster Co.). 75¢ for 10.2 yd. Poor weardown and recovery; poor type-filling characteristics.

Stafford's Ser-Vus (S. S. Stafford, Inc.). 65¢ for 11.6 yd. Poor weardown and recovery; poor type-filling characteristics.

Vertex (Royal Typewriter Co.). $1.25 for 10.3 yd. Poor weardown and recovery; poor type-filling characteristics.

Chancellor. 75¢ for 11.9 yd. Poor weardown and recovery; poor type-filling characteristics.

Pinnacle (Columbia Ribbon & Carbon Mfg. Co.). 92¢ or $1.25 for 11.7 yd. Poor weardown and recovery; poor type-filling characteristics.

Webster's Hub (F. S. Webster Co.). 75¢ for 9.8 yd. Poor weardown and recovery; poor type-filling characteristics.

Underwood Centennial (John Underwood & Co.). 50¢ for 10.3 yd. Poor weardown and recovery; poor type-filling; wavy edges.

NOT ACCEPTABLE

The following ribbons were found to be generally poor, with defects as noted:

Autocrat Super AA Fabric (Goldsmith Bros.). $1 for 9.9 yd. Poor weardown; poor type-filling characteristics; first lines smudgy.

Personality (Exchange Typewriter Shop). 50¢ for 11.6 yd. Poor weardown; poor type-filling characteristics; first lines smudgy.

Guild (Guild Stationery Prod.). $1 for 11.9 yd. Poor weardown; poor type-filling characteristics; first lines smudgy.

Autocrat (Goldsmith Bros.). 75¢ for 11.8 yd. Poor weardown and recovery; poor type-filling characteristics; first lines smudgy.

Batteries

AFTER administering a series of comprehensive tests to 27 brands of automobile storage batteries, CU technicians discovered that *Co-op* was the only brand which retained the high rating it received during CU's 1938 battery tests. However, the general overall quality of batteries has not changed very much since '38, although there has been considerable shifting around of the quality of different brands.

The price range of the batteries tested was from $4.90 for the *Allstate Cross Country*, to $14.75 for the *Mobil* W451. The January 1938 report on thirteen batteries showed that prices for the batteries tested at that time ranged from $6.45 to $21.45. Despite the fact that the price range in the present series is lower, a brand for brand comparison reveals that there has been a general rise of about $1 in the price of batteries since 1938.

TYPES OF TESTS GIVEN

All of the batteries, representing two samples each of 27 brands, were given the following tests: an initial capacity test to see how much of a charge the battery would hold when new; a cold weather "cranking" test; a four week storage test, to see how much of a charge it would retain after that time; an accelerated life test to determine how many times the battery could be discharged and recharged, and a test for the kind of container material.

In determining the ratings for the batteries, CU gave most weight to the results of the life test. In this test forty ampere-hours were discharged by the batteries in one hour, and then the batteries were fully recharged by a standard method.

This discharging and recharging was repeated again and again, the process being controlled by automatic equipment which ran continuously, 24 hours a day, seven days a week. At regular intervals the automatic equipment was shut off and the batteries were completely discharged at the rate of forty amperes in order to find out how much of a charge any one battery was still capable of retaining.

When a battery's capacity for retaining a charge dropped below forty ampere-hours it was considered to have reached the end of its useful life (this being in accordance with Federal Specifications).

The battery which showed up best on this test was a *Co-op* ZG-1, which lasted for 474 cycles of charging and discharging; the poorest was an *Admiral* 45-4-1, which lasted only 146 cycles. It is to be noted that the Federal Government will not accept batteries of this size which do not last at least 269 cycles.

The results of this test can be interpreted in terms of comparative life expectancy. While the test results cannot be used to predict how long any one battery will last in your car, they do give an accurate estimate of which batteries will last longer than others under similar conditions of installation and use.

CAPACITY TEST

Another important factor used in determining the rating of a battery is its "capacity"—the ability it has to supply current for lights and accessories while the generator is not charging. Capacity is measured in ampere-hours; it is determined by measuring the length of time a fully charged battery will supply a constant current. This is really a measure of how much charge a battery will hold.

The tested capacities of the batteries when new did not differ greatly from their nominal ratings of about 100 ampere-hours. However, the consumer is interested not so much in the initial capacity, but rather in the battery's ability to hold an adequate charge during its useful life. The average capacity during the accelerated life test is a measure of this current-supplying ability of a battery, and it was this measurement which CU used in rating the batteries on this score. The battery which had the highest tested average capacity—over 75 ampere-hours — was an *Atlas AG-1*.

COLD WEATHER TEST

For those consumers who live in climates where the Winters are severe, the cold-weather cranking ability of a battery is an important consideration. To measure this, the batteries were held in a cold-storage box until they reached a temperature of zero degrees Fahrenheit. Then the duration of "cranking current" was recorded.

Three brands of batteries, *Willard* HW-1-100, *Delco* 15AA-3 and *Edison* DM115G were appreciably below the Federal Specifications for this test and have been rated "Not Acceptable" on that account.

In the event a car is not used for several weeks, the battery will lose some of its charge as a result of small internal currents flowing into and out of the battery plates. The magnitude of this internal local action will depend upon the amount of impurities present in the plates and the electrolyte.

The amount of local action may be inferred from a test which consists of charging the batteries, putting them "on the shelf" for four weeks, and then measuring their capacity. CU performed this test, and found two batteries, the *Admiral* 45-4-1 and the *Edison* DM 115G, deficient in this respect. For this reason, they were rated "Not Acceptable."

BATTERY CONTAINERS

AUTOMOBILE battery containers are usually made either of hard rubber or of an asphalt composition. Composition containers have

a greater tendency to crack and be affected by temperature changes than hard rubber. Of the 27 brands tested, CU found only four batteries which had hard rubber containers. They were: the *Delco* 15AA-3, the *Co-op* ZG-1 and Montgomery Ward's *Kwik Start* and *Winter King*. The lack of hard rubber containers by some brands may have been due to war-time rubber shortages, and this condition may be improved in the near future.

CU's tests have shown that, in general, double (glass) insulated batteries last longer and are a better value, even at a higher price, than single (wood) insulated batteries of the *same brand*. However, CU has found one glaring exception to this general rule: Montgomery Ward batteries. Ward's *Kwik Start*, a single insulated battery selling for $6.20, tested very much higher in most respects than the *Winter King*, Ward's double insulated battery selling for $7.70.

BATTERY GUARANTEES

It is a standard practice for a new battery to carry a "guarantee." The exact form of the guarantee varies; the most common one is a "Guarantee and Adjustment Policy" used by those manufacturers and distributors who are members of the Association of American Battery Manufacturers.

Under this policy "the manufacturer agrees to repair or replace . . . without charge . . . any battery of his manufacture which fails to give satisfactory service within a period of 90 days from date of sale to the original user." (Quotation from the AABM 1945 Year Book.)

After this initial 90-day guarantee period, the battery is covered by an *adjustment* policy of a specified number of months or mileage. If the battery should fail within the period of this adjustment policy, then the consumer is entitled to credit towards the purchase of a new battery, the amount of credit to be determined, on a pro-rata basis, by the number of months or mileage remaining from the time of the battery's failure to the policy's expiration.

"LEMONS" AMONG BATTERIES

This is really a statement by the manufacturer or distributor of minimum service to be expected from the battery. It simply tends to protect the consumer in the event that he gets stuck with a "lemon" for, as a rule, the battery will outlast the period specified.

Should the consumer be stuck with a "lemon," however, the manufacturer will not take his word for it. Before a battery will be accepted as having failed, it will be tested by the manufacturer or his authorized service station. If the service station to which the purchaser takes his battery for adjustment does not have the necessary testing apparatus, then the battery will have to be shipped to a point where it can be tested, the consumer paying for the cost of shipping.

While the battery is being checked, the consumer will have to bear the expense of a rental battery, which amounts to about 25¢ per day. The manufacturer will not pay for any recharging needed by the battery. And, if the failure of the battery (after expiration of the 90-day guarantee period) is due to mechanical factors, then the battery will be repaired and given back to the consumer, and *the consumer will have to pay for the repair work done.*

ADJUSTMENT PROCEDURE

The responsibility for the adjustment procedure rests largely in the hands of the dealer. CU technicians advise, therefore, that the consumer check with the dealer at the time of purchase, and find out how adjustments will be made. The economical consumer will also carefully inspect his battery for any flaws which might have developed, or might be developing, before the expiration of the initial 90-day period.

As noted in the ratings, some manufacturers and distributors give "trade-in allowances" on old batteries when new batteries are purchased. If the consumer decides to purchase a battery from a dealer who does not offer this allowance, he may still, if he wishes, try to sell his old battery to the dealer or to a junk dealer as junk. The junk value of a battery (for the lead in it) is about 90¢ in the current market.

CONCERNING SPECIMENS PURCHASED

CU's test specimens were purchased through normal consumer retail channels. Distribution methods of different manufacturers vary considerably. Since the quality of a battery decreases with abuse received during distribution, and with the amount of time required for distribution, CU's test results represent quality from the ultimate consumer's viewpoint.

While many manufacturers probably make a battery which is of good quality on the day of manufacture, by the time it reaches the consumer it may no longer be as good a battery. It would appear then, in general, that chain store organizations, which have the distribution problem under their own supervision, should be able to supply batteries of reasonably consistent quality to the consumer.

On the other hand, CU would caution consumers who purchase batteries by mail-order. Two out of six mail-order batteries delivered to CU's laboratory had serious defects (cracked case and entirely spilled electrolyte) due to mishandling during shipment.

The prices listed in the ratings are those paid by CU's shoppers in Greater New York through normal retail channels. The discounts noted are for exchanges for old batteries. No initial guarantee period was offered unless otherwise stated. Except when otherwise noted, two samples of each brand were tested.

BEST BUYS

Kwik Start Type H1 (Montgomery Ward). $6.20 less 75¢ trade-in allowance. Long life-expectancy; fairly high average capacity during life test. Good cold-weather cranking ability; good retention of charge. Visual-type level control. Hard rubber container; single insulation. Guaranteed adjustment period of 18 months. Available at Montgomery Ward retail stores.

Co-op Type ZG-1 (National Cooperatives, Inc., Chicago). $8.60. Long life-expectancy; fairly high average capacity during life test. Fair cold-weather cranking ability; good retention of charge. Visual-type level control. Hard rubber container; double insulation. Guaranteed 90 days; adjustment period of 18 months or 18,000 miles, whichever occurs first. Available nationally.

Allstate Cross Country Heavy Duty. Cat. No. — 1F (Sears, Roebuck). $6.75 plus shipping charges, less 75¢ trade-in allowance. Fairly long life-expectancy; fairly high average capacity during life test. Relatively poor cold-weather cranking ability; good retention of charge. Lead-washer type level control. Composition container; double insulation. Guaranteed adjustment period of 24 months. Only one sample tested; second sample had cracked case. Available by mail order.

Cadet Type 45-4-1G (Cadet Storage Battery Co., Philadelphia). $8.95 less $1 trade-in allowance. Long life-expectancy; fairly high average capacity during life test. Fair cold-weather cranking ability; good retention of

charge. No level control. Composition container; double insulation. Guaranteed adjustment period of 30 months. Available at Pep Boys Stores.

Atlas Type AG-1 (Standard Oil Co. of Indiana, Chicago). $13.85. Very long life expectancy; high average capacity during life test. Fairly good cold-weather cranking ability; good retention of charge. Lead-washer type level control. Composition container; double insulation. Guaranteed 90 days; adjustment period of 27 months.

ACCEPTABLE

(In estimated order of over-all quality)

Atlas Type AG-1 (see "Best Buys").

Kwik Start Type H1 (see Best Buys").

Co-op Type ZG-1 (see "Best Buys").

Mopar Type 3B (Chrysler Corp. Parts Division, Detroit). $11.90. Fairly long life expectancy; high average capacity during life test. Fairly good cold-weather cranking ability; good retention of charge. Visual type level control. Composition container; single insulation. Battery was slightly wider than standard size; be sure it fits your car before you buy. Guaranteed 90 days; adjustment period of 15 months or 15,000 miles, whichever occurs first. Available nationally.

Goodyear All-Weather Type A115 (Goodyear Tire & Rubber Co., Akron, Ohio). $11.45. Fairly long life expectancy; fairly high average capacity during life test. Fairly good cold-weather cranking ability; good retention of charge. Lead-washer type level control. Composition container; single insulation. Guaranteed 90 days; adjustment period of 15 months or 15,000 miles, whichever occurs first. Available nationally.

Cadet Type 45-4-1G (see "Best Buys").

Atlas Type A1 (Standard Oil Co. of Indiana). $9.45. Comparatively short life expectancy; high average capacity during life test. Fairly good cold-weather cranking ability; good retention of charge. Lead-washer type level control. Composition container; single insulation. Guaranteed 90 days; adjustment period of 21 months. Available nationally.

Allstate Cross Country Heavy Duty. Cat. No.—1F (see "Best Buys").

Cadet Type 45-4-1 (Cadet Storage Battery Co.). $7.75 less $1 trade-in allowance. Comparatively short life expectancy; fairly high average capacity during life test. Fair cold weather cranking ability; good retention of charge. No level control. Composition container; single insulation. Guaranteed adjustment period of 30 months. Available at Pep Boys Stores.

Ford Type B (Ford Motor Co., Dearborn, Mich). $11.25. Life expectancy slightly below requirements of Federal Specifications; high average capacity during life test. Fairly good cold-weather cranking ability; good retention of charge. No level control. Composition container; single insulation. Battery was slightly longer than standard size; be sure it fits your car before you buy. Guaranteed 90 days; adjustment period of 18 month or 18,000 miles, whichever occurs first. Available nationally.

Admiral Type 45-4-1G (Strauss Stores Corp., NYC). $11.95 less $1 trade-in allowance. Comparatively short life expectancy; high average capacity during life test. Relatively poor cold-weather cranking ab.lity; good retention of charge. Visual-type level control. Composition container; single insulation. Guaranteed six months; adjustment period of 30 months. Available in Greater New York City at Strauss Stores.

Exide Sure-Start Type 151 (Electric Storage Battery Co., Philadelphia). $11.95. Comparatively short life expectancy; high average capacity during life test. Relatively poor cold-weather cranking ability; fair retention of charge. Lead-washer type level control. Composition container; single insulation. Guaranteed 90 days; adjustment period of 15 months or 15,000 miles, whichever occurs first. Available nationally.

Winter King Type W-1 (Montgomery Ward). $7.70 less 75¢ trade-in allowance. Comparatively short life expectancy; rather low average capacity during life test. Fair cold-weather cranking ability; good retention of charge. Visual-type level control. Hard rubber container; double insulation. Guaranteed adjustment period of 24 months. Available at Montgomery Ward retail stores.

Stromberg Gold Bond Plus Type AG15-13 (Times Square Stores Corp., NYC). $9.88 less $1.50 trade-in allowance. Fairly long life expectancy; rather low average capacity during life test. Relatively poor cold-weather cranking ability; fair retention of charge. No level control. Composition container; double insulation. Guaranteed adjustment period of 36 months. Available in Greater New York City at Times Square Stores.

Firestone Type L-151 (Firestone Tire and Rubber Co., Akron, Ohio). $10.45 less $1 trade-in allowance. Comparatively short life expectancy; fairly high average capacity during life test. Relatively poor cold-weather cranking ability; poor retention of charge. Lead-washer type level control. Composition container; single insulation. Guaranteed 90 days; adjustment period of 15 months or 15,000 miles, whichever occurs first. Available nationally.

Stromberg Gold Bond Type A15-13 (Times Square Stores Corp.). $8.38 less $1.50 trade-in allowance. Comparatively short life expectancy; rather low average capacity during life test. Relatively poor cold-weather cranking ability; fair retention of charge. Visual-type level control. Composition container; single insulation. Guaranteed adjustment period of 24 months. Available in Greater New York City at Times Square Stores.

NOT ACCEPTABLE

(The following batteries were rated "Not Acceptable" for the reasons stated. Order of listings is alphabetical.)

Admiral Type 45-4-1 (Strauss Stores Corp.). $9.95 less $1 trade-in allowance. Samples tested fell below standard in retention of charge and life expectancy. Single insulation.

Allstate Cross Country Cat. No.— 46F (Sears, Roebuck). $4.90 plus shipping charges, less 75¢ trade-in allowance. Samples tested fell below standard life expectancy. Single insulation.

Armstrong Type 15-1 (Armstrong Rubber Co., West Haven, Conn.). $9.50. Samples tested fell below standard in life expectancy. Single insulation.

Delco Type 15AA-3 (Delco-Remy Division of General Motors, Anderson, Ind.). $10.95. Fell below standard in cold-weather cranking ability and life expectancy. Single insulation. Only one sample tested; case of second sample cracked early in test.

Edison Type DM115G (Thomas A. Edison, Inc., Emark Division, Kearny, N. J.). $9.50. Sample tested fell below standard in cold-weather cranking ability and retention of charge. Double insulation.

B. F. Goodrich Standard Type S-145 (B. F. Goodrich Co.). $10.95. Samples tested fell below standard in life expectancy. Single insulation.

Mobil Type W451 (Socony-Vacuum Oil Co., NYC). $14.75. Samples tested fell below standard in life expectancy. Single insulation.

Prestolite Type M1-15 (Prestolite Battery Co., Indianapolis). $11. Samples tested fell below standard in life expectancy. Single insulation.

Willard Type HW-1-100 (Willard Storage Battery Co., Cleveland). $11.75. Samples tested fell below standard in cold-weather cranking ability. Would be "Acceptable" in warm areas, where cold-weather starting is not a problem. Single insulation.

Wizard Type 15W (Western Auto Supply Co., Los Angeles). $7.45 less $1 trade-in allowance. Variable. One sample tested fell below standard in life expectancy; one sample fell below standard for cold-weather cranking ability. Single insulation.

Wizard Type 15G (Western Auto Supply Co.). $7.85 less $1 trade-in allowance. Samples tested fell below standard for life expectancy. Double insulation.

AUTOMOBILE BODIES

Everyone loves to ride in an open car on sunny days, but the convertible has several serious drawbacks

NOT only the price of a car, but also its utility and suitability to your needs depend greatly on the style of body you select. Consequently, once you have decided on the *make* of car you want (see the *Reports*, August 1946 for ratings of the 1946 cars), it will be worth your while to pay more than casual attention to the body.

Based on the May, 1946 OPA retail list prices, using a four-door sedan as the standard, price differentials for the different body types average about as follows:

Two-door sedan	$47 less
Club coupe	$18 less
Business coupe	$99 less
Convertible coupe	$230 more
Station wagon	$303 more

COUPES GAINING IN POPULARITY

Production figures show that the club coupe and convertible coupe have been gaining favor steadily since 1936, at the expense of four-door and especially of two-door sedans. But the latter still account for 42% and 35%, respectively, of all models built.

A two-door sedan should, strictly speaking, have the same interior dimensions as a four-door car, and should use the same rear seat. This is not always the case, however. The flatbacked *GM* and *Packard* two-door bodies, introduced in 1941, are called club sedans, rather than two-door sedans; they have a lower rear seat and less headroom than the four-door sedans, with more legroom than the usual close-coupled or club coupe.

A two-door sedan has the disadvantage of a wide, heavy door, which is awkward in close side-by-side parking or in a narrow garage. The split, folding, front seat back is usually somewhat less comfortable than is a sedan seat, or else it is so heavy as to be hard to fold—especially if you are standing on an icy pavement. There is some merit in a seat back which will fold forward with the door closed. With a two-door car, excessive getting in and out—or planned seating with place cards—is necessary when four or five passengers are dropped off one by one. Finally, it is relatively hard to load bulky or heavy objects into or out of a two-door car as compared with a four-door.

ADVANTAGES OF TWO-DOOR SEDAN

On the other hand, the two-door sedan has better arranged glass area and a cleaner appearance in the side view. It is much less apt to be driven into or out of the garage with a door left open. It is often selected because it is safer for carrying small children, since there are no rear doors for them to open and fall out of. This advantage can be partly offset with the four-door car by removing the interior door handles, or by installing a device which locks the rear doors until the front door is opened.

As compared with the club coupe, both four-door and two-door sedans have much greater rear floor space, in which children can stand and move around freely or in which legs can be stretched out or bundles stored.

The club coupe usually has very limited rear seat legroom; it provides long-distance comfort for only one or at most two rear-seat passengers. It often has less trunk space than a sedan. It has less door interference than a two-door sedan, but the same debarkation and package-loading troubles.

Conversation between front- and rear-seat passengers is easier in a club coupe than in a larger interior—a minor point. And the coupe is easier to heat in Winter. Since the rear seat usually can be reached from the front, it makes a handy repository for objects of all sorts, coats, etc., and this makes the club coupe an excellent type for touring for two or three people.

Rear seat reachability is also an advantage with very small children, but the period during which they are content to stay on a seat passes too quickly for this feature to bear much weight in body selection. The club coupe's compact appearance is popular, but the type is better suited to the small (and sure to remain so) family than the large one, while its price differential is small.

THE BUSINESS COUPE

The business coupe is an interesting type and, partly because it is used frequently as a price leader, it offers very substantial savings in purchase price. Since it has no rear seating facilities, you should be very sure, before you buy one, that seats for three are all you'll need. And if you are figuring even on three, check carefully the size of the hump in the front compartment; frequently this is so large that the middle passenger must assume an awkward and tiring posture.

Business coupes are made in several styles. A few manufacturers use the club coupe (in the case of *Packard*, the club sedan) shell and leave out the rear seat. On Chevrolet, the floor in back of the seat is raised a foot or so, with an oversized fuel tank located under it. More usually the space in back of the seat is occupied by a shelf, with storage space below.

On *Chrysler, DeSoto, Dodge* and *Studebaker* the business coupe body is smaller above the belt line than other coupes and has no quarter window, thus giving additional space under the rear deck. The *Dodge* business coupe is fitted with a special economy axle ratio.

If you plan to use a business coupe in Winter, you will find it an easy car to heat, provided the cold space under the deck is solidly partitioned off from the driving compartment. Some cars use only a drop curtain at this point. Enclosed rear deck storage space in the business coupe exceeds that in any other passenger car type.

CONVERTIBLE HAS DRAWBACKS

THE convertible coupe has the dimensions of the club coupe, but it has a collapsible top. Everyone loves to ride in an open car, when the weather is neither too hot, too cold, too wet nor too windy, but aside from its very high first cost—and high upkeep on account of the soft top—the convertible has some serious drawbacks. Owing to its inefficient structure, it is usually heavier by 200 pounds or so than a closed coupe. It is not as quiet to ride in, and it is hotter with the top up in Summer, unless the back of the top is out. And it is colder in Winter. Furthermore, it does a poor job of protecting its occupants when it rolls over, or if it merely upsets with the top down.

CU suggests, before you invest in a convertible, that you at least learn what the extra $200 or so that a convertible costs will buy in a closed coupe, and compare the value of the two to you.

THE STATION WAGON

The station wagon has the widest range of utility of any car or truck, except possibly the *Jeep*. A vehicle that will carry eight people one day and half a ton of freight the next should, *if needed*, be worth its extra cost over a sedan, even though it tends to be as cold as a barn and have about as many echoes.

The station wagon's other drawbacks are dwarfed by the fact that it is made of wood, and needs a great deal of care to prevent relatively headlong depreciation in both structure and appearance.

The distinctive wooden-body appearance is prized by so many people that it has been extended to coupes and sedans (1946 *Ford, Chrsyler*), and simulated on the new *Willys* all-steel station wagon body. (The *Willys* will be described in a future CU article). Every buyer of a station wagon is taxed because of this desire for conspicuous display, since the body would be less expensive—as well as safer and more durable—if it were made of steel. Another reason for the station wagon's high cost is, of course, its very limited production—something under 1% of the total.

Station wagons are much less standardized than other body types with respect to size, floor plan and elevation, height of seats, location of spare tire, and so on. Prospective buyers will profit by shopping around for the model that best meets their needs, as well as for a body that appears to be soundly constructed.

Analyze beforehand the jobs you want a station wagon to do for you, the number of passengers you expect to carry most of the time, the type and expected amount of luggage or freight, the kind and length of trips to be taken, etc. If you want to carry wallboard to a Summer home, for example, you need a floor width of 48½ inches between the wheelhouses.

If you expect to take long trips with a full load, do not buy without a demonstration of the car fully loaded to see that it handles satisfactorily and that the rear springs are not overloaded so that they "bottom" on rough roads.

If you are buying a station wagon primarily for business use, investigate the *Chevrolet* and *GMC* commercial lines, which offer steel-bodied models with the approximate seating plan and other features of station wagons. Two sizes of station wagon were formerly offered by *International*, on ½ ton and 1-ton chassis; these will presumably be produced again, when truck production has caught up with demand.

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BLANKETS

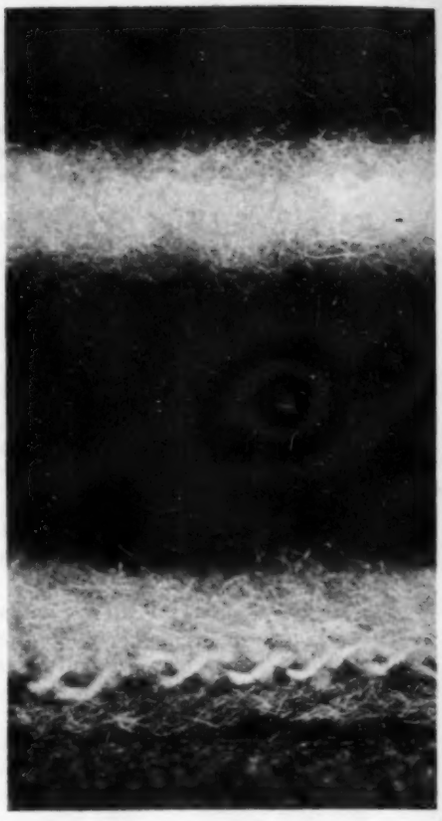
According to CU tests, blankets have not changed much in quality since 1940, but prices have risen 58%

PHOTOGRAPHS of glamorous models languishing under downy blankets appear to be the main motif in present-day blanket advertising. But it is doubtful that even such appetizing eyefuls will blind the consumer to the sharp increases in blanket prices, since CU's last report on them, in November 1940. Many of the price increases are hidden by changes in brand name, but a few examples illustrate the trend:

Wool O' the West Health Ray blanket, for example, is now lighter, thinner and weaker than it was in 1940. And the price has jumped from a prewar $10.50 to $17.95—a direct rise of 71%.

The *Kenwood Arondac* has maintained its 1940 price of $10.50, but the present blanket is lighter and thinner, and has a much lower resistance to abrasion than the prewar model, though it is a few inches longer.

In 1940, *Mariposa* sold a 72 x 84 inch blanket of good quality for $8.98. Today, a blanket of approximately the same quality, made by the same manufacturer, but 74 x 96 inches in size, sold for $13.76. A little figuring shows that along with an 18% increase in area, the price has increased 53%. Or, put another way, a blanket of the size now selling for $13.76 would have cost $10.60 at prewar rates. But even at its new high price, the *Mariposa* rates as a "Best Buy" in comparison to other blankets now being offered.



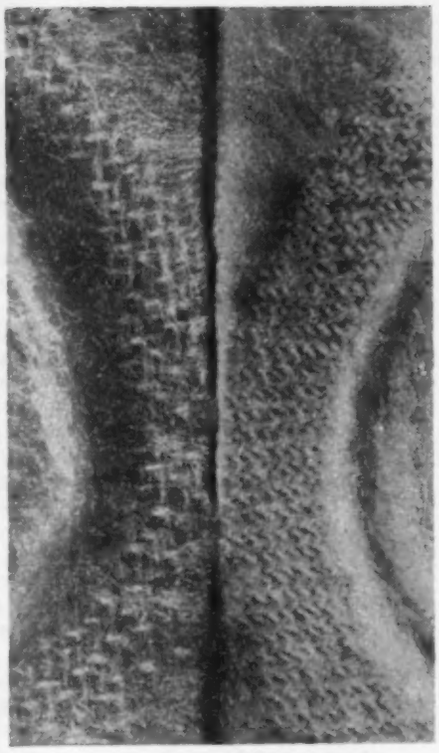
Two blankets are shown here in cross-section. While the top blanket has relatively low nap and is thinner in comparison with the bottom blanket, it will be more durable because of the over-napping of the bottom blanket.

An over-all comparison of the 11 brands of blankets tested in 1940 with the 30 brands in the present series shows that, on the average, they have not changed substantially in quality as measured by tensile strength, resistance to abrasion, thread count, weight and thickness. But the average price has risen from $9.79 in 1940 to $15.53 now—a rise of over 58%.

WHAT IS A GOOD BLANKET?

To give consumer satisfaction, a blanket should be warm, durable, washable, and sufficiently large to serve its purpose.

Warmth depends, to a large extent, upon the air spaces provided by the nap of the blanket. To create the nap, the blanket is first woven flat, and then run over rollers provided with fine wire claws or burrs. These



The base weave of blankets after the nap has been rubbed off in the course of abrasion tests, is shown in this illustration. The loosely-woven blanket (left) is rated as inferior to the closely-woven blanket.

teeth pick up and bring to the surface wool fibers from the filling yarn, which make up the fleece-like nap.

If long-staple wool of good quality is used, the pulled-up fibers remain firmly anchored to the base weave after napping. But if the staple length is short or the quality of the wool poor, the nap will pull out easily or will rub off after very little use.

A blanket with a loose base weave or with loosely-spun filling yarns may look and feel luxuriant, but if it has been over-napped to hide such skimping, it will not be warm enough to start with, and will not long retain much of the warmth it possesses.

BLANKET SPECIFICATIONS

The specifications of the American Society of Testing Materials (ASTM), giving minimum requirements for thread count, weight, thickness and tensile strength, cover two types of all-wool blankets: those weighing more than and those weighing less than 12 ounces per square yard. Only two of the 30 brands tested by CU fell into the light-weight class. One of these—*Wool o' the West Vogue*—sold for $13.95 (higher than either of the two "Best Buy" *Mariposas*, which rated respectively second and third in quality among all the blankets tested), and must be rated simply as a high-priced, low-quality item. The other low-weight blanket was *Montgomery Ward's* Catalogue Number 3642, selling for $7.23. At today's prices, this is a low-cost blanket and, despite its relatively low quality, it is a satisfactory buy for those who cannot afford to pay a higher price.

"TESTING" IN THE STORE

You can do a good deal in the way of judging a blanket's quality while you are examining it in the store.

SPRING: Squeeze a corner of the blanket together in your hand. A good blanket should feel firm and springy, and should snap out of your hand and back to its original shape as you open your fist.

WEAVE: Hold the blanket up against a bright light, and look for thin spots. At the same time, check to see that the weave is close and even. Don't buy a blanket having a loose or uneven weave.

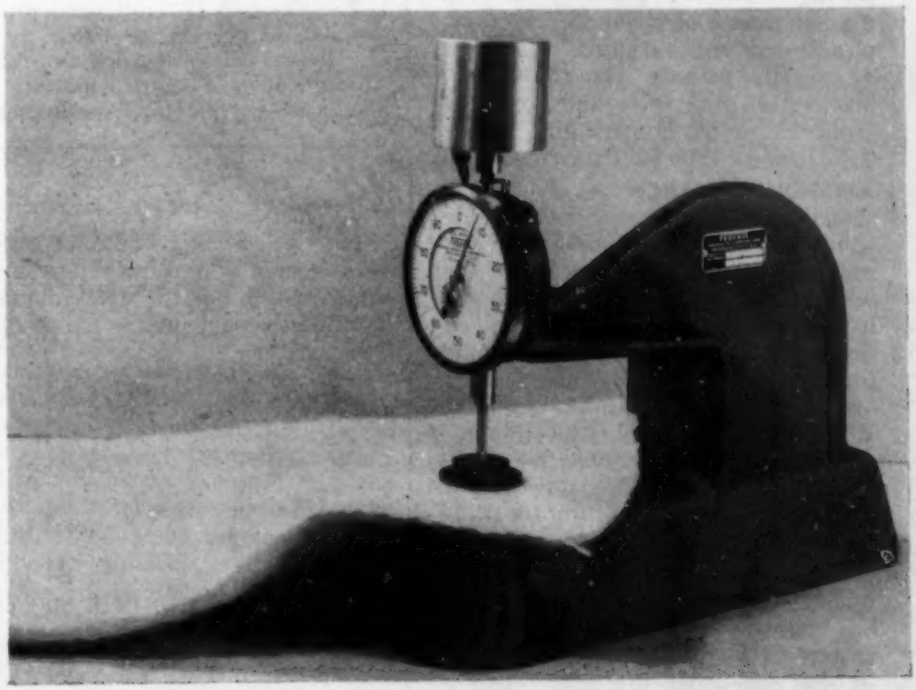
FIRMNESS: Take hold of a section of the blanket in both hands, and pull in opposite directions while pushing your fingers against the stretched surface from underneath. There should be very little slipping of the weave.

NAP: Pick up the nap, near the center of the blanket, between thumb and forefinger, then pick up the blanket by the nap. The nap should not pull out. Rub a portion of the blanket briskly between your hands. The nap should not fuzz, rub off, or form little balls.

COLOR: Spread the blanket out and inspect it critically. There should be no light and dark streaks.

WASHABILITY: You cannot determine this at the store, but you should get with the blanket you buy a guarantee of washability which includes colorfastness and resistance to shrinkage.

SIZE: Before you buy a blanket, you should make sure of the size you need. A blanket that is too small will wear out too quickly; furthermore it will be uncomfortable and will not provide maximum warmth. To be sure your blanket is the right size, calculate length by measuring the length of your mattress and adding to it the mattress' thickness plus at least six inches for tuck-in. To get a blanket of adequate width measure the width of the mattress, add twice the thickness, and then leave an allowance for take-up of the body. For two persons in a bed, a wider blanket is needed than for a single person (see table).



This thickness gauge measures the thickness of the blanket under a uniform pressure of one pound per square inch, so as to eliminate the factor of over-napping. Thickness, along with weight, contributes to warmth, though the two do not necessarily go hand in hand.

RATINGS

WEIGHT: The blankets varied in weight from 9.4 to 16 ounces per square yard. The heavier blankets got the higher scores.

THICKNESS: Thickness was measured with a special thickness gauge, under a uniform pressure of one pound per square inch. Under this pressure (which is used to eliminate the effect of over-napping), the thickness range in the blankets tested was from .096 to .172 inch. Thickness, along with weight, contributes to warmth, though thickness and weight do not necessarily go hand in hand.

THREAD COUNT: The number of threads per inch in the warp and filling affects both the strength and the tendency of the nap to pull out. The higher thread count a blanket has, the more closely it is woven and the more likely it is to be durable. Thread counts on the blankets tested ranged from a high of 41 warp by 41 filling to a low of 20 warp by 17 filling. In some weaves, the warp count is considerably higher than that of the filling yarns.

TENSILE STRENGTH The pull required to tear a blanket apart in either direction is one measure of its durability. The tensile strength of the warp is the more important, since most of the pulling the average blanket gets is in the lengthwise direction; in the samples tested, the variation was from 31 to 102 pounds. In the filling, blankets of different brands required from 13 to 55 pounds pull before they tore.

ABRASION RESISTANCE: A mechanical abrading device was used on the blankets, and a measurement was made of the number of strokes of the wheel required to wear down the nap so that the base fabric showed through (see illustration). On one brand, weardown was noted after only 280 revolutions of the abrasion wheel; the best blanket in this respect wore down only after 1250 rubs.

SHRINKAGE: Washing with luke-warm water and mild soap resulted in shrinkage of up to 6% lengthwise and up to 4% in the width of some blankets.

COLOR: None of the blankets faded in the course of the tests, though there was some bleeding (running of the color) in some samples. This was considered of no significance, since blankets are not washed in the same tub with other clothing, and the bleeding was so slight as not to affect the color of the blankets themselves. The same was true of the blanket bindings.

The ratings which follow are based on all the tests described above. Blankets are listed below in order of estimated over-all quality. Unless otherwise indicated, the blankets tested were 72 x 90 inches.

BEST BUYS

The following were judged to offer the best values for the money among the blankets tested:

Mariposa Broadmoor (Shuler & Benninghofen, Hamilton, Ohio). $13.76. 15.9 oz. per sq. yd. Tensile strength of warp, below average; of filling, excellent. Resistance to abrasion excellent. Thread count average. Weight excellent; thickness average. Available nationally.

Mariposa No. 5690 (Shuler & Benninghofen). $13.94. 16 oz. per sq. yd. Tensile strength of warp average; of filling, excellent. Resistance to abrasion excellent. Thread count of warp, below average; of filling, average. Weight excellent; thickness average. Very similar to **Mariposa Broadmoor**, above. Available nationally.

ACCEPTABLE

(In order of estimated over-all quality)

St. Marys Lamar (St. Marys Woolen Mfg. Co., St. Marys, Ohio). $23.50. 15.2 oz. per sq. yd. Tensile strength of warp, above average; of filling, average. Resistance to abrasion excellent. Thread count of warp, excellent; of filling, average. Weight above average; thickness excellent. Available nationally.

Mariposa Broadmoor (see "Best Buys").

Mariposa No. 5690 (see "Best Buys").

Springfield Radiant (Springfield Woolen Mills Co., Springeld, Tenn.). $23.95. 15.1 oz. per sq. yd. Tensile strength above average. Resistance to abrasion excellent. Thread count average. Weight above average; thickness below average.

Pendleton (Pendleton Woolen Mills, Pendleton, Ore.). $17.95. 15 oz. per sq. yd. Tensile strength above average. Resistance to abrasion excellent. Thread count average. Weight above average; thickness average.

Chatham Lamsdown (Chatham Mfg. Co., Elkin, N. C.). $15.95. 14.5 oz. per sq. yd. Tensile strength of warp, excellent; of filling, below average. Resistance to abrasion above average. Thread count of warp, excellent; of filling, average. Weight and thickness average.

Kenwood Famous (F. C. Huyck & Sons, Albany, N. Y.). $15.95. 14.6 oz. per sq. yd. Tensile strength above average. Resistance to abrasion excellent. Thread count of warp, average; of filling, below average. Weight average; thickness below average.

North Star Shasta (North Star Woolen Mill Co., Minneapolis). $14.95. 14.5 oz. per sq. yd. Tensile strength of warp, above average; of filling, average. Resistance to abrasion excellent. Thread count of warp, average; of filling, below average. Weight and thickness average. Available nationally.

Fieldcrest Nobility (Marshall Field & Co., NYC). $16.95. 15.4 oz. per sq. yd. Tensile strength of warp, above average; of filling, average. Resistance to abrasion average. Thread count of warp, excellent; of filling, average. Weight and thickness above average.

North Star Zephyr (North Star Woolen Co.). $25. 12.6 oz. per sq. yd. Tensile strength of warp, below average; of filling, excellent. Resistance to abrasion excellent. Thread count excellent. Weight below average; thickness poor.

Macy's Haverill House (R. H. Macy & Co., NYC). $19.98. 15.4 oz. per sq. yd. Tensile strength of warp, average; of filling, below average. Resistance to abrasion above average. Thread count of warp, above average; of filling, below average. Weight above average; thickness average. Available at Macy's Dep't Store, NYC.

Springfield Riviera (Springfield Woolen Mills Co.). $21.90. Size 80 x 90 in. 14.7 oz. per sq. yd. Tensile strength below average. Resistance to abrasion excellent. Thread count of warp, above average; of filling, average. Weight average; thickness below average.

Wards Cat. No.—3663 (Montgomery Ward). $9.88 plus postage. 13.4 oz. per sq. yd. Treated for mothproofing. Tensile strength of warp, above average;

Blanket Sizes . . .

The following are the blanket sizes generally recommended for standard-size beds. They allow for the necessary tuck-in and body take-up:

Crib	40 x 60 in.
	42 x 60 in.
Cot or Youth Bed	60 x 84 in.
Single Bed	66 x 84 in.
	72 x 90 in.[1]
Twin Bed	72 x 84 in.
	72 x 90 in.[1]
Three-Quarter Bed	72 x 84 in.
	72 x 90 in.[1]
Double Bed	72 x 84 in.
	72 x 90 in.[1]
	80 x 90 in.[2]

[1] Recommended for tall persons.
[2] Recommended for two persons.

of filling, average. Resistance to abrasion above average. Thread count average. Weight and thickness average. Available by mail order.

St. Marys Mayfair (St. Marys Woolen Mfg. Co.). $16.95. 14.2 oz. per sq. yd. Tensile strength of warp, below average; of filling, average. Resistance to abrasion excellent. Thread count of warp, average; of filling, below average. Weight and thickness above average. Available nationally.

Fieldcrest Frost King (Marshall Field & Co.). $12.95. 15.3 oz. per sq. yd. Tensile strength below average. Resistance to abrasion average. Thread count of warp, average; of filling, below average. Weight and thickness above average.

North Star Wave (North Star Woolen Mill Co.). $16.95. 13.3 oz. per sq. yd. Tensile strength of warp, average; of filling, below average. Resistance to abrasion average. Thread count above average. Weight average; thickness below average. Available nationally.

Wool o' the West Signature (Portland Woolen Mills, Portland, Ore.). $31.50. 13.1 oz. per sq. yd. Tensile strength of warp, average; of filling, below average. Resistance to abrasion above average. Thread count of warp, excellent; of filling, average. Weight below average; thickness poor.

St. Marys Paramount (St. Marys Woolen Mfg. Co.). $15.95. 14.9 oz. per sq. yd. Tensile strength of warp, below average; of filling, above average. Resistance to abrasion average. Thread count of warp, poor; of filling, below average. Weight above average; thickness average. Available nationally.

Wool o' the West Health Ray (Portland Woolen Mills, Inc.). $17.95. 15.1 oz. per sq. yd. Tensile strength below average. Resistance to abrasion average. Thread count of warp, poor; of filling, below average. Weight above average; thickness below average.

Macy's (R. H. Macy & Co.). $10.29. 13.5 oz. per sq. yd. Tensile strength above average. Resistance to abrasion average. Thread count of warp, average; of filling, below average. Weight average; thickness poor. Available at Macy's Dep't Store, NYC.

Kenwood Standard (F. C. Huyck & Sons). $13.95. 13.5 oz. per sq. yd. Tensile strength of warp, above average; of filling, average. Resistance to abrasion average. Thread count of warp, poor; of filling, below average. Weight average; thickness poor.

Wards Cat. No.—3623 (Montgomery Ward). $11.59 plus postage. 13.5 oz. per sq. yd. Treated for mothproofing. Tensile strength of warp, below average; of filling, above average. Resistance to abrasion average. Thread count average. Weight average; thickness below average. Available by mail order.

Keystone (American Woolen Co., NYC). $8.98. 14.1 oz. per sq. yd. Tensile strength of warp, average; of filling, below average. Resistance to abrasion average. Thread count of warp, poor; of filling, below average. Weight average. Thickness poor. Very similar to American Woolen's **Westchester**, below.

Kenwood Arondac (F. C. Huyck & Sons). $10.95. 12.9 oz. per sq. yd. Tensile strength of warp, above average; of filling, below average. Resistance to abrasion average. Thread count of warp, average; of filling, below average. Weight below average; thickness poor.

Westchester (American Woolen Co.). $9.98. 14.1 oz. per sq. yd. Tensile strength of warp, above average; of filling, average. Resistance to abrasion average. Thread count of warp, average; of filling, below average. Weight average; thickness poor. Very similar to American Woolen's **Keystone**, above.

Welwyn by Nashua (Nashua Mfg. Co., Nashua, N. H.). $13.95. 13.5 oz. per sq. yd. Tensile strength of warp, average; of filling, poor. Resistance to abrasion average. Thread count below average. Weight average; thickness below average.

Wool o' the West Vogue (Portland Woolen Mills, Inc.). $13.95. 11.5 oz. per sq. yd. Tensile strength of warp, below average; of filling, poor. Resistance to abrasion average. Thread count average. Weight and thickness poor.

Chatham Woolshire (Chatham Mfg. Co.). $10.95. 12.1 oz. per sq. yd. Tensile strength below average. Resistance to abrasion average. Thread count average. Weight and thickness below average.

Wards Cat. No.—3642 (Montgomery Ward). $7.23 plus postage. Size 72 x 84 in. 9.4 oz. per sq. yd. Treated for mothproofing. Tensile strength of warp, below average; of filling, poor. Resistance to abrasion average. Thread count average. Weight and thickness poor. Available by mail order.

Golden Dawn (J. C. Penney Co.). $11.90. Treated for mothproofing. Two blankets sold under this label, at the same price, appeared quite different. First blanket: 13.9 oz. per sq. yd. Tensile strength average. Resistance to abrasion below average. Thread count average. Weight average; thickness poor. Second blanket: 12.1 oz. per sq. yd. Tensile strength of warp, below average; of filling, poor. Resistance to abrasion poor. Thread count of warp, poor; of filling, below average. Weight and thickness below average.

JEALOUSY

by Dr. Joseph Lander

Dr. Joseph Lander discusses jealousy among children in the 7th of a series of articles on "Your Child"

A problem which occurs in obvious fashion in almost every home where there is more than one child, and in less obvious fashion in a home with only one child, is jealousy among children. In fact, *every* child is jealous to some degree of his rivals. The jealousy may be brief or prolonged. It may be mild or so severe as to lead to literally murderous attacks on the rival. In any case, the parents can be sure that, with the arrival of the second child and later children, the household horizon will be somewhat darkened.

This jealousy, if properly handled, can be a constructive experience. It can prepare the child for later experiences of rivalry (school, job, love) and enable him to deal with those situations in a healthy fashion. It is only by living through such crises, and being guided through them (not over-protected against them) by affectionate and wise parents, that the child develops the personality traits enabling him to handle his aggressions in mature fashion.

When a first child feels insecure or threatened by the appearance of a new baby, it is the fear of losing his parents' love and attention which lies at the roots of his jealousy. This fact affords the clue to how to deal with the problem.

Certain real difficulties are unavoidable; the mother actually must leave her child for a while for the confinement; for a time after the confinement, she must refrain for physical reasons from doing as much as she formerly did for her child; and thereafter she must give the new infant some of the time and attention which hitherto had been given exclusively to the older child. Nevertheless, the child's frustrations from these complications can be minimized.

For example, during the confine-

ment the older child should be left in the care of someone who can give him considerable time and affection —preferably someone who came into the household some weeks before the mother's departure. The child should be taken out of the home, on a special trip to zoo or park or on a picnic, when its mother comes home from the hospital, because this return is likely to be a situation of confusion and excitement in which he will be brushed aside. The newborn baby should not be nursed or cared for, during the first few days or a week, in the presence of the older child.

The child's father and grandparents should be keenly conscious of the harm they can do to the older child if they ignore him to gurgle over the newborn. They should take the greatest pains to be rather casual about the new baby and to make a special fuss over the older one for a considerable period.

If the older child is a girl, she will often "act out" the problem to a considerable extent with her doll, to whom she can give the same attention she sees her mother giving the newborn. The girl can also "act out" against the doll the hostility she feels against the new baby, striking or tearing or otherwise punishing the doll, and thus draining off her mounting tension. If the older child is a boy, he is likely to carry out this process with toy animals rather than with a doll baby.

When, however, the aggression is obviously directed against the rival itself, the mother or father should at all costs avoid forcing the hostility "underground," so as not to give the child the feeling that he is a dreadful and evil monster. His hostility to the rival needs to be *neutralized* rather than *buried*. If buried, it will inevitably emerge later, to cause further complications.

The parent should cuddle the aggressor, telling him something like, "I know you would like to get rid of little Billy, but Daddy and Mommy love you just as much as we always did, and we will always love you. It's hard to get used to having him around, but later on, when he's bigger, you and he will have fun together. He will be someone you can play with." Repeated reassurance of this sort will gradually but effectively deal with the hostility in most cases.

Allowing the older child to help in the care of the newborn by fetching needed items, by helping with the bath, etc., will also permit him to "identify" himself with the mother, thereby taking on some strength from her, which will enable him to deal with his aggressions.

Naturally, the arrival of a new baby will raise the question in the child's mind, "Where do babies come from?" The stork school of thought should be dropped finally and completely. Actually, it does not fool the child, or if it does, he discovers by the time he is four or five that it is a deception. Purely aside from the fact that such a tale weakens his faith in other things his parents may tell him, it arouses his feeling that the data in this area are "top secret" and therefore *need* to be concealed.

This, of course, brings obvious complications in its train. Children want and deserve a simple and honest answer, even if they don't understand it completely. No detailed description of the birth process need be given at this point. A very young child will generally be satisfied with the reply, "Baby grew from a seed in mother."

The parents must be prepared to tolerate obvious—or less obvious—manifestations of the inevitable jealousy. The older child may temporarily take on babyish behavior, regressing to a level (in eating, in toilet habits, in independence) he had previously outgrown. The parent who loves his child will accept this temporary setback in casual and affectionate manner, without overt distress and without inflicting punishment. Such patience and acceptance is the surest guarantee that all will go well later.

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COMMON COLDS

It is probably "just another cold" to you, but it may have been caused by psychological disturbances

According to medical statistics, the incidence of colds in this country comes to about two per person per year. This is an average figure; many persons have three, four or five colds a year; others have none.

The colds themselves are thought to be caused by a virus. Once the cold is established, the bacteria normally present in the nose and throat invade the weakened tissues of these passages and cause many of the complications of colds—sinusitis, middle ear infections, acute laryngitis, bronchitis and even pneumonia. Though it is known that colds and their complications are caused by viruses and bacteria, and that colds are spread by coughing and sneezing, little or nothing has been discovered as to effective methods of preventing or curing colds. (See the *Buying Guide* for discussion of this aspect of colds.)

Doctors have also long been puzzled by the fact that some persons suffer many colds each year, while others are rarely affected. Exposure to the cold virus is of itself not enough to cause a cold, for all persons in a given environment get the same degree of exposure. There must be another factor—one not readily measured or describable by ordinary medical techniques. Recent studies by the method of psychoanalysis of persons who suffer from frequent colds have thrown new light on the mechanism of infections of the respiratory tract.

For years, observers of human disease and human nature have been aware of a connection between the emotions and respiratory disorders. The rhythm and rate of breathing itself are often indications of a state of mind. Strong emotional reactions —love, hate, fear, anger—are reflected in changes in the rate and depth of respiration.

An intimate connection between anxiety and breathing has long been noted by physicians. Gasping or sighing breaths—as though one could not get enough air into the deepest part of the lungs—are common symptoms of an anxiety state. The anxiety may not be apparent to the patient—that is, it may be an unconscious anxiety —but its power to cause a disturbance in function in an organ can be very real, nevertheless. A feeling of suffocation, or the need to take deep breaths frequently are sometimes referred to as "anxiety equivalents". Persons with these breathing difficulties are frequently treated for

heart trouble, because a murmur may have been heard over the heart, or for asthma because the breathing may be associated with a history of allergy. Yet in many cases permanent relief can be obtained only from psychiatric treatment.

Several psychiatrists have reported the cases of persons whose repeated colds were found to be caused, in the main, by psychological disturbances. Latent anxieties and unrelieved tensions actually predispose to colds by lowering the resistance of the nose and throat to the cold virus, so that if exposure to the virus occurs, a cold will inevitably follow. In a different frame of mind, the same person would probably not become afflicted when exposed.

THE COUGH SYMPTOM

Coughing is a symptom of many disorders. It occurs as an aftermath of the common cold and as a symptom of acute and chronic disorders of the nose, throat, sinuses, bronchial tubes and lungs. The cough itself is a reaction of the bronchial tubes to the presence of an irritant somewhere in the respiratory tract—nose, throat, lungs or the bronchial mucous membrane itself. The cough serves the purpose of discharging or getting rid of secretions. But in many persons the cough serves as a means of discharging mental or emotional "mucus," rather than physical. The fact is that inner psychological tensions must be gotten rid of in some way. Whether they are discharged through purposeful, useful words or social activities, or through purposeless, neurotic symptoms depends on whether or not the individual is suffering from emotional conflict.

Neurotic persons often have fantasies of having a foreign substance within themselves. The attempts to expel the foreign substance may be made by vomiting attacks in some persons, and by coughing spells in others. Persistent coughs with no explainable organic cause may represent an unconscious attempt to cough up an imagined harmful substance.

Psychological coughing tends to occur in those persons whose respiratory tract has, either through heredity or through some early emotional experience, acquired a particular sensitivity toward psychic stimuli. Dr. Otto Fenichel,[1] an eminent psychiatrist, has described many types of psychological coughing. He points out, for example, that hysterical coughing (that is, a purposeless, useless cough without organic basis) is likely to occur when a hysterically disposed person lives in the proximity of a patient with a chronic cough and has some unconscious reason for identifying himself with the cougher. Dr. Sigmund Freud originally emphasized the importance of identification in the development of hysterical and neurotic symptoms. He cited the example of a girls' school, where a sick girl reacted with a fainting spell to a love letter, whereupon many of the other girls also had spells of fainting. The unconscious meaning was clear: "We should like to get love letters, too."

In some persons, a persistent, tickling cough has the quality of a nervous "tic." The cough seems to cover a feeling of embarrassment or extreme self-consciousness. In other individuals, the cough may express hostility. Thus, the persistent cougher at a play, recital or lecture may be expressing resentment or hostility to the performer, without knowing that such resentment exists. In fact, he may not be aware of any emotional feeling toward the performance or the performer. And, as has been demonstrated on numerous occasions by the studies of psychoanalysis, unconscious feelings are more powerful and influential than conscious ones.

Another type of nervous cough has a more complicated origin. A person may have the nervous habit of continuously and forcefully clearing his throat. This has a drying effect on the mucous membrane of the throat, which may lead to the development of an acute sore throat. This, in turn, causes a cough. The cough itself is not directly emotional in its origin, but the person behaves in such a way as to cause an organic disease (in this case, a sore throat) and this in turn produces a cough. Such "organo-neurotic" symptoms are common not only in the respiratory tract, but in other organs too.

Some persons continue to cough, even after the original organic disease (such as sinusitis or sore throat) has healed. The cough may then serve as a means of drawing attention to the patient—a kind of exhibitionism. Or it may express a need for affection, a desire for the solicitude, sympathy and comfort that go with sickness.

Successful treatment of a cough of nervous origin depends upon unravelling the emotional background of the cough. This is not always easy to do. As Dr. Fenichel points out, "Such simple . . . measures as the the use of will-power and, 'relaxation' may occasionally work, but in general not much can be expected from them. If will-power were sufficient to control the cough, why didn't the patient apply his own will-power previous to the doctor's suggestion? The patient who accepts the doctor's suggestion and applies it successfully is not using his own will-power, but rather that of the authoritative doctor, which he has incorporated and borrowed from him: he is obeying the doctor's order as a hypnotized person obeys the orders of the hypnotist." Dr. Fenichel here exposes the basis for much of the successful therapeutic exhortations of physicians. Successful treatment of an organic as well as a nervous disorder often depends less on the properties of the drug administered than on the confidence of the patient in the doctor.

The discussion in the accompanying article on the emotional aspects of colds and coughs is not presented with any idea that the information in it will make it possible for the individual to prevent or cure these maladies. Rather it is printed here as a further demonstration of the way in which the individual's emotional state may be closely tied up with illness.

[1] "The Psychopathology of Coughing," *Psychosomatic Medicine*, April, 1943.

ANNUAL QUESTIONNAIRE

The answers to CU's annual questionnaire reveal interesting facts about CU members as consumers

Nearly 40,000 CU members from all parts of the country sent detailed replies to Consumers Union's Annual Questionnaire, which was mailed out in May, along with the ballot for elections to CU's Board of Directors. The answers, which have now been tabulated, reveal some very interesting facts about who CU members are, what they think about important issues of the day, their opinions of CU publications and policies, their buying habits, and their plans for future buying.

But aside from their general interest, the replies to the Questionnaire will serve an important function during the coming months. They will act as a guide to CU's Directors and staff in setting organization policies and in working out CU's technical and research program.

Just what sort of person is the average CU member? His replies to the Questionnaire give answers to such questions as:

Does He Live in a Large or a Small Community?

Most CU members live in big cities, 27% of them in cities of over a million population (New York, Chicago, Philadelphia, Detroit, Los Angeles) and 24% in cities with populations of 100,000 to a million. Of the remaining 49% of CU members, 16% live in cities of 25,000 to 100,000 population, 21% come from cities and towns with populations of 2500 to 25,000, and the remaining 12% are from small towns and farms —communities of less than 2500 people.

A comparison of CU's membership with the distribution of the adult population of the United States in terms of the size of community lived in shows an interesting contrast:

In Which Part of the Country Does He Live?

The CU membership is relatively concentrated in the New England and Middle Atlantic States and on the West Coast, which account jointly for 57.5% of CU members, but for only 37.1% of the total U. S. population (1940 census). The Middle West claims 27.4% of CU's members and a like percentage of the population as a whole. But whereas only 15% of CU members live in the Southern, Southwestern and Mountain States, census figures show that 35.5% of the population reside in these areas.

What Are His Living Arrangements?

Over half (54%) of those who answered the Questionnaire live in their own homes, with the remaining 46% living in rented quarters. Altogether, about 75% of the members live in one- or two-family houses; 24% occupy apartments; the remaining 1% live in hotels or rooms.

(A similar question in the 1944 Questionnaire showed that at that time home-owners made up about 50% of CU's membership, 20% lived in rented houses, and the remaining 30% in apartments.)

Does He Plan to Build or Buy a Home?

Some 49% of CU members answered "Yes" to the question of whether they plan to buy or build a home in the next few years. To the same question 35% replied that they did not intend to buy or build, and 16% were undecided.

Of those who plan to buy or build homes in the near future, the largest single group—38%—plan to spend from $5000 to $7500 for them. The next largest group —27%—would be willing to spend $7500 to $10,000 for their homes. Some 13% want to buy or build homes for less than $5000, and 19% plan to live in houses costing $10,000 to $20,000. The remaining 2% intend to spend even more for their homes.

How Much Income Does He Expect This Year?

The largest single group of CU members—one quarter—expect their family incomes for the year to be from $3000 to $4000. There are almost 18% each in the $2000 to $3000 and the $4000 to $5000 brackets, with more than 19% anticipating incomes of $5000 to $7500. The remaining 20% of answers scatter above and below these income figures, with less than 1% expecting incomes of below $1000 and about the same percentage expecting $25,000 or more.

(In answering the 1944 Questionnaire, 83% of members then reported incomes of $2000 to $7500; less than 7% reported incomes of less than $2000, as against just over 5% in the current survey; 10% had incomes of $7500 or over as compared with 12.7% currently.)

An interesting comparison can be made between the anticipated income figures of CU families for 1946 and the figures on family income in the United States as a whole, compiled by the Office of Price Administration in 1942. (See table)

Does He Belong to an Organization?

Two-thirds of CU members or their families report affiliation with some group, some belong to several. Of these, 44% belong to women's clubs or organizations, 35% to trade unions, 28% to veterans' organizations, over 17% to consumer groups (consumer clubs, cooperatives, etc.), and 35% to a variety of other organizations. These figures add to more than 100% because of multiple answers; that is, families having more than one affiliation.

Does He Agree with CU on Questions of Consumer Protection?

CU members are overwhelmingly in favor of CU's policies in this field. They favor most strongly CU's stand on grade labeling, to the tune of a 94% vote; they favor, though in somewhat smaller majority, CU's program in support of rent control, price control, a housing program and Federal health insurance. To a question asking members whether they approved CU's active campaign on these important social welfare issues, they replied as follows:

Population Comparison

Population of U. S. (21 and over)	Size of Place	Where our members live
13.3%	1,000,000 and over	27.4%
18.2%	100,000 to 1,000,000	23.6%
11.9%	25,000 to 100,000	16 %
16.9%	2,500 to 25,000	21.2%
39.7%	Under 2,500	11.8%

CU Members' Stand on Consumer Issues

	Approve	Disapprove	Take No Stand
Price Control	86.3%	9.6%	4.1%
Rent Control	89.3%	5.4%	5.3%
Housing Program	86.2%	4.2%	9.6%
Federal Health Insurance	72.0%	13.0%	15.0%
Grade Labeling	93.7%	2.2%	4.1%

Has He Written His Congressman?

CU is pretty proud of its members here. Almost half—47%—of members say they have written one or more letters to a Senator or Congressman about legislation this year.

What Goods Does He Plan to Buy?

The long list of members' needs and wants is headed by automobiles, with 51% planning to buy a car in the coming year. Almost as many—50.7%—are in the market for a radio. Next in popularity are washing machines, refrigerators, vacuum cleaners, electric toasters, electric food mixers, cameras and pressure cookers (in that order), with 25% to 33% of members wanting to buy each of them. Other electrical and mechanical equipment is in smaller demand, from electric clocks, wanted by 20%, to coal stokers, by 1.5%.

What Kind of Radio Does He Want?

Among those who plan to buy radios, 37% want to get radio-phonographs with FM, and three-fourths of these are prepared to spend $100 to $500 for their instruments. Radio-phonographs without FM are on the "buy" list of 30% of prospective radio buyers, and over half plan to spend $100 to $500 on a set. Table-model radios will be bought by 22% and auto radios by 14%, according to plan. About a third of those who buy will purchase more than one radio set, their answers show.

Will He Buy a Television Set?

Of the 7.7% who expressed interest in buying a television set, 48% said they would not buy a black-and-white receiver if there seemed to be a good prospect that color-television would be on the market within the next two years; 21% said they would buy the present black-and-white receiver as soon as a good set was available, without waiting for color television to come out. The remaining 31% registered "Undecided."

Of the small group who would buy black-and-white sets, 84% plan to spend less than $400 for a unit; 54% plan to buy their sets for $200 or less.

Where Does He Shop?

The mail order catalogues of Sears, Roebuck and Montgomery Ward account for at least some purchases by 60% of those who replied; a substantial number also buy from Spiegel and Alden's mail order houses. Furthermore, nearly 88% report that they sometimes buy at Sears' and Ward's retail stores.

About 38% of the members do some of their buying from consumer cooperatives; 6% buy regularly from co-ops.

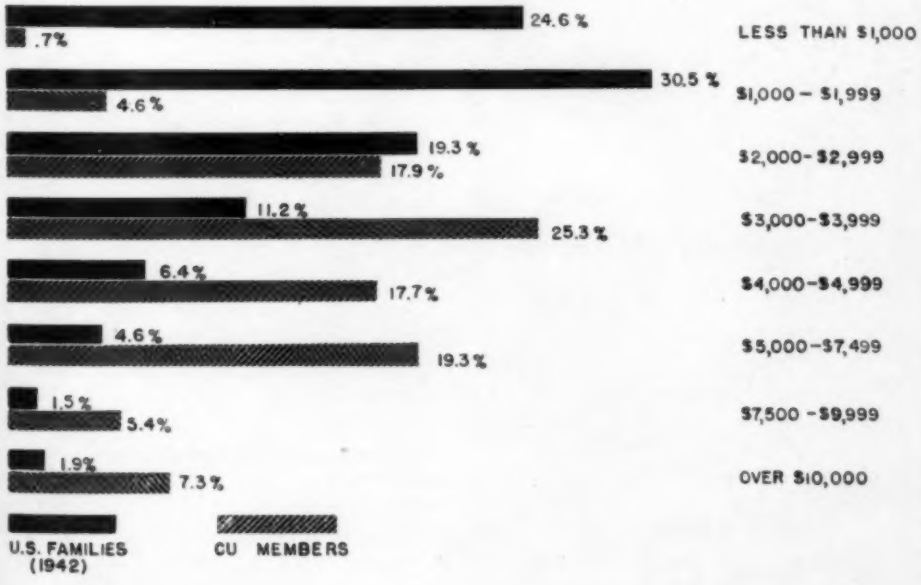
How Does He Feel about Radio Commercials?

More than three-fourths of the CU members who replied listen to the Jack Benny *Lucky Strike* show; of the listeners, 41% don't like the commercials, 31% are indifferent to them and 28% say they like them. Three-quarters of the members tune in to *Johnson Wax's* Fibber McGee & Molly; well over half—57%—express approval of the commercials, 32% dislike them and 11% are indifferent. Gabriel Heater, newscasting for *Kreml Hair Tonic*, attracts 54% of the members. The majority—54%—react to his commercials with distaste; 29% express indifference; 17% find them to their liking.

The Ford Sunday Evening Hour and the Bell Telephone Hour each attract 65% of CU members as listeners. In each case, more than half the listeners indicate a liking for the commercials; fewer than 8% find the Bell commercials distasteful, while about 15% express dislike for Ford commercials.

Of the 41% who listen to U. S. Steel's Theater Guild on the Air, almost half—46%—express a take-it-or-leave-it attitude toward the commercial; 39% say they like it and 15% express displeasure.

Consumers were asked to mark the approximate income bracket into which their immediate family's total annual income, for the year 1946, would fall. The results, in comparison with incomes of all U. S. families in 1942 are shown below:



There's So Much to Buy . . .

New Cars

New Radios

New Refrigerators

New Vacuum Cleaners

New Washing Machines

New Irons

New Toasters

New household equipment is coming to the market every day, and each new item appears with newer and more fanciful ads telling why it, rather than its competitor is the only one for you.

What's the truth of the matter?

The answer to that is CU's job.

Reports on many postwar consumer durables have already been published in *Consumer Reports.* Tests of many others are now under way.

If your own subscription is up for renewal, do it now, using the renewal form on the reverse of this page.

If not, pass the form on to a friend. He'll be grateful for your help in making CU's brand name ratings available to him during the coming year.

CUMULATIVE INDEX

Each issue of the Reports contains this cumulative index of principal subjects covered since publication of the 1946 Buying Guide issue. By supplementing the Buying Guide index with this one, members can quickly locate current material and keep abreast of changes resulting from new tests. Page numbers run consecutively beginning with the January 1946 issue: Jan. 1-28, Feb. 29-56, Mar. 57-84, Apr. 85-112, May 113-140, June 141-168, July 169-196, Aug. 197-224, Sept. 225-252.